

City of North Port



Request for Bid No. 2024-15 NORTH PORT UTILITIES ADMINISTRATION BUILDING



FINANCE DEPARTMENT/PURCHASING DIVISION
4970 CITY HALL BLVD
NORTH PORT, FL 34286
Office: 941.429.7170
Fax: 941.429.7173
Email: purchasing@northportfl.gov



**NOTICE OF AVAILABILITY OF BID SPECIFICATIONS
REQUEST FOR BID NO. 2024-15
NORTH PORT UTILITIES ADMINISTRATION BUILDING**

The City of North Port is requesting sealed bids to secure the services of an experienced, professional, licensed, and qualified Contractor capable of providing construction services in accordance with the specifications and drawings to construct the North Port Utilities Administration Building in its entirety.

**NON-MANDATORY PRE-BID MEETING and SITE VISIT: March 8, 2024 at 10:00 am
4970 CITY HALL BOULEVARD, ROOM 337A, NORTH PORT, FLORIDA 34286**

**BID OPENING April 16, 2024 AT 2:00 PM
4970 CITY HALL BOULEVARD, ROOM 337A, NORTH PORT, FLORIDA 34286**

****ALL BIDS ARE DATE AND TIME STAMPED IN THE FINANCE DEPARTMENT, SUITE 337 FIRST AND THEN ARE OPENED IN SUITE 337a****

Information regarding this project may be viewed and downloaded from Demandstar's website at www.demandstar.com. Links to DemandStar are also available from the city website at www.cityofnorthport.com. Bid specifications are posted on the City FTP site at <https://northportfl.gov/filesshare> (go to the drop down box, select Purchasing and scroll to Project RFB No. 2024-15); however, the only place to obtain addenda are on www.demandstar.com. If you have any questions, concerns, or problems accessing the bid package using the link, please contact Keith Raney, Contract Administrator II, at 941.429.7103. Requests for additional information or clarification regarding the specifications must be sent via facsimile to 941.429.7173 or via email to purchasing@northportfl.gov. No verbal requests will be honored. All questions and clarifications must be submitted via e-mail or facsimile by **April 9, 2024, at 2:00 PM.**

Reference documents that are confidential and/or exempt pursuant to Florida Statutes section 119.071(3) shall be made available to interested individuals or entities subject to applicable law. Specifically, to receive confidential and/or exempt reference document(s) Attachments 1C North Port Architectural and Lighting; 1D North Port Electrical; 1E North Port Fire Protection; 1F North Port Industrial; 1G North Mechanical; 1H North Port Plumbing and 1I North Port Structural (collectively the "Exempt Documents") as an electronic file or other media as the City may deem appropriate, Bidders must have an authorized representative sign the City's Exempt Documents Request and Acknowledgement ("EDRA") form, which is attached hereto as Attachment 17 the EDRA form and incorporated herein by reference. Upon the City's receipt of a signed and notarized EDRA form, and the City's review, approval, and confirmation of the information contained therein and the requestor's and Bidder's compliance with the provisions of these Bid Documents and applicable statutory requirements a Bidder may receive access to the Exempt Documents. The Bidder must submit a complete and signed EDRA form via email to: purchasing@northportfl.gov. The Bidder is encouraged to submit its signed EDRA as soon as possible, considering whether it wishes to review the Exempt Documents prior to any pre-bid conference and/or site visit. The City shall review completed, signed EDRA forms on a first-come-first-served basis subject to staff availability. EDRA forms received less than five business days before the Bid Opening will not be reviewed. Additional responsibilities

regarding Exempt Documents and Florida's Public Records Law may be found in Paragraph 19, below, and Paragraph 4.C.(6) of the Sample Contract (referenced paragraphs subject to change).

The City of North Port does not discriminate on the basis of race, color, national origin, sex, age, disability, family or religious status in administration of its programs, activities or services.

PUBLISH DATES: February 16, 2024

- Herald Tribune

PUBLISH DATES: February 16, 2024

- www.northportfl.gov & www.demandstar.com

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“THIS IS A ‘SAMPLE CONTRACT’ ISSUED FOR INFORMATIONAL PURPOSES ONLY AND AS SUCH IS SUBJECT TO CHANGE”

ATTACHMENTS:

- 1A. Project Manual Volume 1 Divisions 1-14 (799 Pages)
- 1B. Project Manual Volume 2 Divisions 15-33 (1167 Pages)
- 1C. North Port Architectural and Lighting_100% CD_2023.00718 (125 Pages)
- 1D. North Port_Electrical_100% CD_2023.0303 (23 Pages)
- 1E. North Port Fire Protection_100% CD_2023.0303 (9 Pages)
- 1F. North Port_Industrial_100% CD_2023.0303 (5 Pages)
- 1G. North Port_Mechanical_100% CD_2023.0303 (22 Pages)
- 1H. North Port_Plumbing_100% CD_2023.0303 (14 Pages)
- 1I. North Port_Structural_100% CD_2023.0303 (28 Pages)
- 1J. Construction Plans (21 pages)
- 1K. FDEP PWS Permit (5 pages)
- 1L. FDEP WW Permit (4 pages)
- 1M. INF Application (8 pages)
- 1N. MAS Application (5 pages)
- 1O. SWFWMD Permit (10 pages)
- 1P. Signed Development Order
- 1Q. Signed Final Plans
- 1R. Bid Form (Excel) Multiple Sheets

STATEMENT OF NON-SUBMITTAL

If you **do not** intend to submit a bid on this service, please return this form (see information below) immediately.

We, the undersigned, have declined to submit a bid on the requested Request for Bid **2024-15 North Port Utilities Administration Building**

_____ Insufficient time to respond to the Request for Bid.

_____ We do not offer this product/service.

_____ Our schedule would not permit us to perform.

_____ Unable to meet bond/insurance requirements.

_____ Specifications are unclear (explain below).

OTHER (please specify below).

REMARKS: _____

COMPANY NAME: _____

ADDRESS: _____

CITY: _____ **STATE:** _____ **ZIP CODE:** _____

TELEPHONE: _____ **FAX:** _____

E-MAIL ADDRESS: _____

SIGNATURE: _____ **DATE:** _____

Note: "Statement of No Bid" may be faxed or e-mailed to the Purchasing Division at purchasing@northportfl.gov or faxed to 941.429.7173.

SECTION I. INSTRUCTIONS TO BIDDERS

THESE CONDITIONS ARE STANDARD FOR ALL BIDS FOR COMMODITIES/SERVICES ISSUED BY THE CITY OF NORTH PORT. THE CITY OF NORTH PORT MAY DELETE, SUPERSEDE OR MODIFY ANY OF THESE GENERAL CONDITIONS FOR A PARTICULAR CONTRACT BY INDICATING SUCH CHANGE IN SPECIAL CONDITIONS TO BIDDERS OR IN THE BID SHEETS. ANY AND ALL SPECIAL CONDITIONS THAT MAY VARY FROM THE GENERAL CONDITIONS SHALL HAVE PRECEDENCE. BIDDER AGREES THAT THE PROVISIONS INCLUDED WITH THIS REQUEST FOR BID SHALL PREVAIL OVER ANY CONFLICTING PROVISIONS WITHIN ANY STANDARD FORM CONTRACT OF THE BIDDER REGARDLESS OF ANY LANGUAGE IN BIDDER'S CONTRACT TO THE CONTRARY.

DEFINITIONS: Terms used in these Instructions to Bidders are defined and have the meanings assigned to them.

- Addenda: a written change to a solicitation
- Bid: any offer submitted in response to this request for Bid.
- Bidder: One that submits a bid in response to this Request for Bid.
- Bid Documents: Includes the General Terms and Conditions; Special Conditions; Technical Specifications, the Bid Form; Non-Collusive Affidavit; Public Entity Crime Form; Certificate(s) of Insurance, if required; Payment and Performance Bonds, if required; Corporate Resolution; Bid Bond, if required; Scrutinized Company Affidavit and Certification and all Addendums issued prior to receipt of bids.
- City: Shall refer to City of North Port, a municipal corporation of the State of Florida.
- Contract: The agreement to perform the services set forth in this solicitation. The Contract will be comprised of the Bid documents signed by both parties including any addenda and other attachments specifically incorporated.
- Responsible: Refers to a bidder that has the capacity and capability to perform the work required under a Request for Bid, and is otherwise eligible for award.
- Responsive: Refers to a bid that contains no exceptions or deviations from the terms, conditions, and specifications set forth in the Request for Bid.
- Request for Bid (RFB): Shall mean this solicitation document, including any and all addenda. A RFB contains well-defined terms, conditions, and specifications, and is awarded to the lowest priced responsive and responsible bidder.
- Solicitation: The written document requesting either bids or proposals from the marketplace.
- Successful Bidder: The lowest responsive, responsible Bidder to whom City (on basis of City's evaluation) makes an award.
- Vendor or Contractor: A general reference to any entity responding to this solicitation or performing under any resulting Contract.

The City has established for purposes of this Request for Bid (RFB) that the words "shall," "must," or "will" are equivalent and indicate a mandatory requirement or condition, the material deviation from which shall not be waived by the City. A deviation is material if, in the City's sole discretion, the deficient response does not substantially satisfy this RFB's mandatory requirements. The words "should" or "may" are equivalent in this RFB and indicate very desirable conditions, or requirements that are permissive in nature.

1. INSTRUCTIONS TO BIDDERS

A. QUALIFICATIONS OF BIDDER: It is intent to the City to award this Contract to the lowest responsible bidder, qualified by experience and solvency, with proven reliability and the ability to provide the services or items required under this Contract within a reasonable time frame acceptable to the City. Bidder may be required to supply information in writing at the request and discretion of the City prior to award of bids, in order to verify above requirements.

B. EXAMINATION OF BID DOCUMENTS: Prior to submission of a bid form, bidders shall carefully examine the General

Terms and Conditions, Special Conditions, Technical Specifications, and all other related bid documents, including all modifications thereof, incorporated in the bid package, plus fully informing themselves as to all existing conditions and limitations that effect the work to be performed under this contract.

Discrepancies, omissions, or questions about the intent of the documents should be submitted to the Purchasing Division in written form as a request for interpretation no later than five (5) business days prior to bid opening (or shall be verbally addressed at the pre-bid conference, if applicable).

It shall be the responsibility of the bidder, prior to submitting their response, to either visit www.demandstar.com to view the solicitation and download all issued addenda or contact Purchasing to determine if addenda were issued.

Examination of site: Prior to submitting a bid form, each bidder may examine the site and all conditions thereon. All bid forms shall be presumed to include all such existing conditions as may affect any work to be done on this project. Failure to familiarize himself with such conditions will in no way relieve the successful bidder from the necessity of furnishing any materials or performing any work that may be required to complete the work in accordance with the drawings and Specifications.

Reference documents that are confidential and/or exempt pursuant to Florida Statutes section 119.071(3) shall be made available to interested individuals or entities subject to applicable law. Specifically, to receive confidential and/or exempt reference document(s) Attachments 1C North Port Architectural and Lighting; 1D North Port Electrical; 1E North Port Fire Protection; 1F North Port Industrial; 1G North Mechanical; 1H North Port Plumbing and 1I North Port Structural (collectively the “Exempt Documents”) as an electronic file or other media as the City may deem appropriate, Bidders must have an authorized representative sign the City’s Exempt Documents Request and Acknowledgement (“EDRA”) form, which is attached hereto as Attachment 17 the EDRA form and incorporated herein by reference. Upon the City’s receipt of a signed and notarized EDRA form, and the City’s review, approval, and confirmation of the information contained therein and the requestor’s and Bidder’s compliance with the provisions of these Bid Documents and applicable statutory requirements a Bidder may receive access to the Exempt Documents. The Bidder must submit a complete and signed EDRA form via email to: purchasing@northportfl.gov. The Bidder is encouraged to submit its signed EDRA as soon as possible, considering whether it wishes to review the Exempt Documents prior to any pre-bid conference and/or site visit. The City shall review completed, signed EDRA forms on a first-come-first-served basis subject to staff availability. EDRA forms received less than five business days before the Bid Opening will not be reviewed. Additional responsibilities regarding Exempt Documents and Florida’s Public Records Law may be found in Paragraph 19, below, and Paragraph 4.C.(6) of the Sample Contract (referenced paragraphs subject to change).

C. CLARIFICATION AND ADDITIONAL INFORMATION: Discrepancies, omissions, or questions about the intent of the documents will be submitted to the City of North Port Purchasing Manager, or his/her designee in written form as a request for interpretation no later than five (5) business days prior to the bid opening (or may be verbally addressed at the pre-bid meeting, if applicable).

Interpretations made will be in the form of an addendum to the documents, which will be forwarded to all bidders. Receipt by each bidder must be acknowledged on the bid form, indicating the addendum number and date of issue, therein becoming part of the Contract. No oral explanations shall be binding. The City will attempt to notify all prospective bidders of addenda issued to the bid documents; however, it shall be the responsibility of the bidder, prior to submitting their bid, to contact the Purchasing Manager, or his/her designee, to determine if addenda were issued, acknowledging and incorporating it into their bid.

D. MODIFICATION OR WITHDRAWAL OF BIDS: Bid modifications will be accepted from a bidder only if received in writing, properly signed by an officer of the bidder, and received prior to the opening of bids. Bid modifications must be identified as such and will be opened with the bidder’s bid form.

Bids may be withdrawn by request of the bidder prior to the time fixed for opening. Error or negligence on the part of the bidder in preparing the bid confers no right for the withdrawal of the bid after it has been opened.

E. NO BID: A respondent who is on the bid notification list and decides not to submit a response is requested to complete the Statement of Non-Submittal Form and return it to the City.

F. CONFLICTS WITHIN SOLICITATION: Where there appears to be a conflict between the General Terms and Conditions, Special Conditions, the Technical Specifications, the Bid Form, or any addendum issued, the order of precedence shall be: the last addendum issued, the Bid Form, the General Terms and Conditions, the Special Conditions, and Technical Specifications. It is incumbent upon the vendor to identify such conflicts to the designated purchasing representative prior to the bid or proposal response date.

G. PROMPT PAYMENT: It is the policy of the City that payment for all purchases by the City shall be made in a timely manner and that interest payments will be made on late payments in accordance with Part VII, Chapter 218, Florida Statutes, known as the Local Government Prompt Payment Act. The bidder may offer cash discounts for prompt payments; however, such discounts will not be considered in determining the lowest price during bid evaluation.

2. PREPARATION AND SUBMISSION OF BID FORM

Bid Form: Bids shall be made on forms supplied by the City, or as otherwise specified. Each bid must state the name of the bidder, the bidder's full business address and state the type of business entity, followed by the original signature and designation of the officer or other person authorized to bind the corporation. Any erasures or other corrections in the bid form must be explained or noted over the signature of the bidder. Bid forms containing any conditions, omissions, unexplained erasures, alterations, or irregularities of any kind may be rejected by the City.

Bid Bond: Each bid must be accompanied by a bidder's bond or Cashier's check with their bid in the amount of NOT LESS THAN 5% of their total amount of the bid. This security shall ensure that the Bidder does not revoke the bid after bid opening, or fails to execute any necessary additional documents. Cashier's checks will be returned to all bidders after award of bid.

Bid Documents: Bid documents and forms shall be submitted sealed to the City of North Port, Purchasing, 4970 City Hall Boulevard, Suite 337, North Port, Florida 34286. The envelope/package shall be clearly marked with the Bid Number, Name and Business Address of the bidder. All interested firms are required to submit one (1) original and one (1) copy of their completed bid offer.

Submission of a response constitutes a binding offer and shall be subject to all terms and conditions specified in the solicitation.

For your bid to be acceptable, ***all blank spaces*** must be completely annotated where and when requested. All bids must contain a ***manual signature*** of the authorized representative of the bidder in the space provided on the Bid Certification Form.

Responsibility for getting this bid to the City on or before the specified date and time is solely and strictly the responsibility of the bidder. The City will not be responsible for any delay, for any reason whatsoever. Bids must be received and stamped with the date and time on the outside of the envelope, and must be in the City Purchasing Office by the date and time specified for opening.

Bids postmarked prior to said date and time but not received shall not be considered and will be returned to bidder unopened.

Bid Guarantee: The bid form shall be signed where indicated constituting an agreement that the bidder will not withdraw his/her bid for a period of ninety (90) days after the opening of the bids.

Source of Supply and Subcontractors: Bidders are to complete the attached Source of Supply and Subcontractors form. This form must be completed and included with the bid form. If bidder does not have a source of supply or subcontractor, insert "to be determined". When source or subcontractor is determined, selection

will be subject to City approval.

Bid Opening: All bids received by the date and time so specified shall be opened and **the name of each bidder and total bid price of each bidder** read aloud within the designated room at City Hall, at the bid opening. The opening and reading shall be in the presence of the City Clerk and the Purchasing Manager or their designees. Bidders and the general public are not required to be present, but are invited and encouraged to attend.

Late Bids: Bids received after the date and time of bid opening will not be considered and will not be opened. It will be the bidder's responsibility to make arrangements for the return of the bid package at their expense.

3. CITY RIGHTS: The City of North Port reserves the right to accept or reject any and/or all bids in whole or in part, to waive irregularities and technicalities, and to request resubmission with or without cause and/or to accept the bid that, in its judgment, will be in the best interest of the City. Also, the City reserves the right to accept all or any part of the bid and to increase or decrease quantities to meet additional or reduced requirement of the City. In the event the city receives only one response; the bid may be either accepted or rejected by the City depending on available competition and the timely needs of the City.

4. AWARD OF BID: The award shall be let to the lowest responsive, responsible bidder who fulfills all criteria and specifications with consideration to favorable references and whose evaluation by the City indicates that the award will be in the best interest of the City.

Errors: For the purpose of the initial evaluation of bids, the following will be utilized in resolving arithmetic discrepancies found on the face of the bidding schedule as submitted by bidders:

Obviously misplaced decimal points will be corrected.

In case of discrepancy between unit price and extended price, the unit price will govern. Apparent errors in extension will be corrected.

Apparent errors in addition of lump sum and extended prices will be corrected.

For the purpose of bid evaluation, the City will proceed on the assumption that the bidder intends his/her bid be evaluated on the basis of the unit prices, extensions, and totals arrived at by resolution of arithmetic discrepancies as provided above and the bid will be so reflected on the tabulation of bids.

5. BID TABULATIONS: Pursuant to Florida Statute §119.071(1)(b), all bid tabulations shall be posted in the City Hall, 4970 City Hall Boulevard, North Port, Florida and on DemandStar's website at www.demandstar.com within thirty (30) days after bid opening or at such time as the agency provides notice of a decision or intended decision, whichever is earlier.

6. WARRANTY: All warranties express and implied, shall be made available to the City for goods and services covered by this solicitation. All goods furnished shall be fully guaranteed by the vendor against factory and workmanship defects. At no expense to the City, the vendor shall correct any and all apparent and latent defects that may occur within the manufacturer's standard warranty period. The special conditions of the solicitation may supersede the manufacturer's standard warranty.

7. DESCRIPTIVE INFORMATION: Unless otherwise specifically provided in the Technical specifications, all equipment, materials and articles incorporated in the work covered by this Contract are to be new and of the most suitable grade for the purpose intended. Unless otherwise specifically provided in the Technical specifications, reference to any equipment, material, article or patented process, by trade name, make or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. If the bidder wishes to make a substitution to the specifications, the bidder shall furnish the City the name of the manufacturer, the model number and other identifying data and information necessary to aid in the City in evaluating the substitution. Such substitution

shall be subject to City approval. Substitutions shall be approved only if determined by the City to be equivalent to the specifications. A bid containing substitution is subject to disqualification if the City does not approve the substitution.

8. TAXES/FREIGHT: The bid shall include any freight, handling, delivery, surcharges or other incidental charges. Unless otherwise specified in the solicitation, prices quoted shall be F.O.B. Destination. The City is exempt from the payment of Federal and State taxes, including sales tax. The bid offer shall not include sales tax to be collected from the City. The City's sales tax exemption is not available to vendor for items vendor purchases, regardless of whether these items will be transferred to the City.

In the event the project is declared a sales tax recovery project by the City, the following procedure shall apply:

- (a) The City representative shall make a recommendation to the Division of Procurement Services regarding the materials to be purchased;
- (b) When those materials are purchased by the City, all purchase orders shall be issued directly from Purchasing;
- (c) The City shall take title to those materials directly from the manufacturer/supplier and shall bear the risk of loss or damage to the materials which are delivered directly from the manufacturer/supplier;
- (d) The City shall be invoiced directly for the materials from the manufacturer/supplier and shall pay the invoices directly to the manufacturer/supplier, presenting its sales tax exemption certificate at the time of payment.

The cost of any materials purchased through the sales tax recovery program shall be deducted from the Contract amount and the vendor shall no longer be responsible for providing those materials. A written change order shall be executed.

9. CONTINUATION OF WORK: Any work that commences prior to and will extend beyond the expiration date of the current Contract period shall, unless terminated by mutual written agreement between the City and the vendor, continue until completion without change to the then current prices, terms and conditions.

10. TERMINATION OF CONTRACT:

Funding in Subsequent Fiscal Years: It is expressly understood by the City and the vendor that funding for any successive fiscal years of the Contract is contingent upon appropriation of monies by the City Commissioners. In the event that funds are not available or appropriated, the City reserves the right to terminate the Contract. The City will be responsible for payment of any outstanding invoices and work completed by the vendor prior to such termination.

Termination With or Without Cause: The City shall have the right to unilaterally cancel, terminate or suspend this Contract, in whole or in part, by providing the Contractor thirty (30) days written notice by certified mail.

The City reserves the right to terminate this Contract, in part or in whole, in the event the vendor fails to perform in accordance with the terms and conditions stated herein. The vendor will be notified by letter of the City's intent to terminate. In the event of termination for default, the City may procure the required goods and/or services from any source and use any method deemed in its best interest. All re-procurement cost shall be borne by the vendor.

Termination by Vendor: Vendor shall have the right to terminate services only in the event of the City failing to pay Vendor's properly documented and submitted invoice within ninety (90) calendar days of the approval by the City's Administrative Agent, or if the project is suspended by the City for a period greater than ninety (90) calendar days.

11. PROPRIETARY OR CONFIDENTIAL INFORMATION: Bidders are hereby notified that all information submitted as part of, or in support of bid submittals will be available for public inspection after opening of bids in compliance with

Chapter 119 of the Florida Statutes, the Public Record Act. The bidder should not submit any information in response to this solicitation which the bidder considers proprietary or confidential. The submission of any information to the City in connection with this solicitation shall be deemed conclusively to be a waiver of any protection from release of the submitted information unless such information is exempt from disclosure under the Public Records Act, and such information is marked as exempt. Failure to mark a trade secret as exempt waives the exemption.

12. RULES, REGULATIONS AND LICENSES: The vendor shall comply with all federal, state, and local laws and regulations applicable to provision of the goods and/or services specified in this solicitation.

It shall be the responsibility of the Contractor to assure compliance with OSHA, EPA and/or other local, federal, or State of Florida rules, regulations or other requirements, as each may apply.

When applicable and as required by law, the bidder will provide a material safety data sheet with each delivery of a toxic substance.

The vendor shall maintain books, records, documents, and other evidence directly pertaining to or connected with the services under this Agreement which shall be available and accessible at the vendor's offices for the purpose of inspection, audit, and copying during normal business hours by the CITY, or any of its authorized representatives. Such records shall be retained for a minimum of five (5) years after completion of the services.

13. CODE OF ETHICS: With respect to this bid, if any bidder violates or is a party to a violation of the Florida Statutes, Chapter 112, Part III, Code of Ethics for Public Officers and Employees, such bidder may be disqualified from furnishing the goods or services for which the bid is submitted and shall be further disqualified from submitting any future bids for goods or services for the City.

14. COLLUSION: By offering a submission to this RFB, the bidder certifies that the bidder has not divulged to, discussed or compared his/her bid with other bidders and has not colluded with any other bidder or parties to this bid whatsoever. Also, bidder certifies, and in the case of a joint bid each party thereto certifies as to his/her own organization, that in connection with this bid: any prices and/or cost data submitted have been arrived at independently, without consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices and or cost data, with any other bidder or with any competitor; any prices and/or data quoted for this bid have not been knowingly disclosed by the bidder and will not knowingly be closed by the bidder prior to the scheduled opening directly or indirectly to any other bidder or to any competitor; no attempt has been made or will be made by the bidder to induce any other person or firm to person or persons interested in this bid, principal or principals is/are named therein and that no person other than therein mentioned has any interest in this bid or in the Contract to be entered into; and no person or agency has been employed or retained to solicit or secure this Contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee excepting bona fide employees of the bidder.

15. PUBLIC ENTITY CRIMES: In accordance with Florida Statutes Sec. 287.133(2)(a), "A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a Contract to provide any goods/services to public entity, may not submit a bid on a Contract with a public entity for construction or repair of public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a Contractor, supplier, subcontractor, or consultant under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Sections 287.017, for Category Two, for a period of 36 months from the date of being placed on the convicted vendor list." By submitting a bid, vendor certifies that vendor is not currently prohibited from transacting business with the City due to the above statute. The vendor shall comply with the terms of this statute both before and during the term of this Contract.

16. DRUG FREE WORKPLACE PREFERENCE: The City has adopted a policy in observation of the Drug Free Workplace Act of 1988. Therefore, it is unlawful to manufacture, distribute, dispense, possess, or use any controlled substance

in the City workplace.

The City requests that the attached Drug Free Workplace Affidavit accompany the bid response. This form has been adopted by the City in accordance with the Drug Free Workplace Act. The City will not disqualify any bidder who does not sign the affidavit. The Drug Free Workplace Affidavit is primarily used as a tie breaker when two or more separate entities have submitted bids at the same price, terms and conditions, with preference given to the bidder who has signed the affidavit.

17. EQUAL EMPLOYMENT OPPORTUNITY: The City of North Port, Florida, in accordance with the provisions of Title VII of the Civil Rights Act of 1964 (78 Stat. 252) and the Regulations of the Department of Commerce (15 CFR, Part 8) issued pursuant to such Act, hereby notifies all bidders that it will ensure that in any Contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit replies in response to this advertisement and will not be discriminated against on the ground of race, color or national origin in consideration for an award.

18. NON-DISCRIMINATION: The City of North Port does not discriminate on the basis of race, color, national origin, sex, age, disability, family or religious status in administration of its programs, activities or services. Pursuant to F.S. §287.134(2)(a), an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a Contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity.

19. DECLARATION OF EXEMPTION FROM PUBLIC RECORD: Pursuant to Florida Statute §119.071(b)2, all bid documents are exempt from public record until such time as the City provides notice of an intended decision or until 30 days after opening the bids, whichever is earlier.

In accordance with Florida Statutes 119.0701, Contractor shall comply with all public records laws, and shall specifically:

- 19.1. Keep and maintain public records required by the City to perform the service.
 - a. The timeframes and classifications for records retention requirements must be in accordance with the General Records Schedule GS1-SL for State and Local Government Agencies. (See <http://dos.state.fl.us/library-archives/records-management/general-records-schedules/>).
 - b. "Public records" means and includes those items specified in Florida Statutes 119.011(12), as amended from time to time, and currently defined as: All documents, papers, letters, maps, books, tapes, photographs, films, sound recordings, data processing software, or other material, regardless of the physical form, characteristics, or means of transmission, made or received pursuant to law or ordinance or in connection with the transaction of official business with the City. Contractor's records under this Contract include but are not limited to, supplier/subcontractor invoices and contracts, project documents, meeting notes, e-mails and all other documentation generated during this Contract.
- 19.2. Upon request from the City's custodian of public records, provide the City, at no cost, with a copy of the requested records or allow the records to be inspected or copied within a reasonable time

at a cost that does not exceed the cost provided for by law. All records kept 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.

- 19.3. Ensure that project records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and, if the Contractor does not transfer the records to City following completion of the contract, for the time period specified in General Records Schedule GS1-SL for State and Local Government Agencies.
- 19.4. Upon completion of the contract, transfer, at no cost, to the City all public records in Contractor's possession or keep and maintain public records required by the City to perform the service. If the Contractor transfers all public records to the City upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon the completion of the contract, the Contractor shall meet all applicable requirements for retaining public records.
- 19.5. The Bidder, as part of this solicitation process (and as the Contractor, if the Bidder is the Successful Bidder) in various forms or media, may hold, come into possession of, generate, and/or make lawful copies of certain security and firesafety system plans, building plans, blueprints, schematic drawings, and diagrams, including but not limited to draft, preliminary, and final formats that depict the internal layout and structural elements of a building or other structure owned or operated by the City that is confidential and/or exempt from the inspection, examination, and/or duplication of public records pursuant to Florida's Public Records Law, Florida Statutes section 119.071(3) ("Exempt Documents"). Information made exempt by Florida Statutes section 119.071(3)(b) may only be disclosed to licensed architects, engineers, or contractors who are performing work on or related to a building or structure owned and operated by the City, and these individuals must maintain the exempt status of the Exempt Documents. The Bidder has read and is familiar with Florida's Public Records Law. The Bidder must remain in compliance with Florida's Public Records Law, including but not limited to maintaining the exempt status of the Exempt Documents for so long as any Exempt Documents are held by or are otherwise in the Bidder's possession; requiring the same of those with whom the Bidder lawfully shares the Exempt Documents. The Bidder must destroy all Exempt Documents (and any copies thereof in whatever media) in possession of the Bidder (or in possession of others by or through the Bidder) prior to the date and time set forth in this solicitation for Bid Opening. The Bidder's failure to timely destroy all Exempt Documents shall go to the Bidder's responsibility to be awarded this and other public contracts. **To the maximum extent allowed by Florida law, the Bidder indemnifies, defends, holds harmless, and releases the City from any action or claim arising out of or related to the Bidder's failure to comply with these Bid Documents or Florida's Public Records Law. This paragraph shall survive the award, termination, expiration, or cancellation of this solicitation.**
- 19.6. **IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT CUSTODIAN OF PUBLIC RECORDS, 4970 CITY HALL BOULEVARD, NORTH PORT, FLORIDA 34286, 941.429.7063 OR HOTLINE 941.429.7270; E-MAIL: publicrecordsrequest@cityofnorthport.com.**

19.7. Failure of the Contractor to comply with these requirements shall be a material breach of this Contract. Further, Contractor may be subject to penalties under Florida Statutes 119.10.

20. FORCE MAJEURE: Should performance of any obligation created under this Agreement become illegal or impossible by reason of:

- a. A strike or work stoppage, unless caused by a negligent act or omission of either Party;
 - b. An act of God, tornado, hurricane, flood, sinkhole, fire, explosion, landslide, earthquake, epidemic, pandemic, quarantine, pestilence, or extremely abnormal and excessively inclement weather;
 - c. An act of a public enemy, act of war, terrorism, effect of nuclear radiation, blockage, insurrection, riot, civil disturbance, state of martial law, or national or international calamity;
 - d. A declared emergency of the federal, state, or local government; or
 - e. Any other like event that is beyond the reasonable control of the non-performing party;
- then the performance of any such obligation is suspended during the period of, and only to the extent of, such prevention or hindrance, provided that:
- f. The non-performing party provides written notice within five (5) days of the event of *force majeure*, describing the event in sufficient detail, including but not limited to: the nature of the occurrence, a good faith estimate of the duration of the delay, proof of how the event has precluded the non-performing party from performing, and the means and methods for correcting the delay; and continues to furnish timely reports of all actions required for it to commence or resume performance of its obligations under this Agreement;
 - g. The excuse of performance is no greater in scope or duration than required by the event of *force majeure*;
 - h. No obligations of either party that arose before the *force majeure* are excused as a result of the event of *force majeure*; and
 - i. The non-performing party uses all reasonable diligence to remedy its inability to perform.

Economic hardship of a party does not constitute an event of *force majeure*. A party will not be excused from performance due to forces that it could have reasonably prevented, removed, or remediated prior to, during, or immediately after their occurrence.

The non-performing party's affected obligations under this Agreement will be temporarily suspended during, but not longer than, the continuance of the event of *force majeure* and a reasonable time thereafter as may be required to commence or resume performance of its obligations. Notwithstanding the above, performance shall not be excused under this Section for a period exceeding two (2) months, provided that in extenuating circumstances, the City may excuse performance for a longer term.

21. GOVERNING LAWS: The interpretation, effect, and validity of any Contract resulting from this RFB shall be governed by the laws and regulations of the State of Florida. Exclusive venue of any court action shall be in Sarasota County, Florida.

22. SUBCONTRACTING: Unless otherwise specified in this solicitation, the vendor shall not subcontract any portion of the work without the prior written consent of the City. The ability to subcontract may be further limited by the Special Conditions. Subcontracting without the prior consent of the City may result in termination of the Contract for default.

23. MODIFICATION OF CONTRACT: Any Contract resulting from this solicitation may be modified by mutual consent of duly authorized parties, in writing through the issuance of a modification to the Contract and/or change order as appropriate. This presumes the modification itself is in compliance with all applicable City procedures.

24. SUCCESSORS AND ASSIGNS: The vendor shall not assign any interest in any Contract resulting from this solicitation and shall not transfer any interest in same (whether by assignment or novation) without prior written consent of the City, except that claims for the money due or to become due to the vendor from the City under any Contract may be assigned to a financial institution or to a trustee in bankruptcy without such approval from the City. Notice

of such transfer or assignment due to bankruptcy shall be promptly given to the City.

25. CONTRACTING WITH CITY EMPLOYEES OR BOARD MEMBERS: Any City employee, Board member or member of his or her immediate family seeking to Contract with the City shall seek a conflict of interest opinion from the purchasing manager or their designated representative prior to submittal of a response or application of any type to Contract with the City. The affected employee or Board member shall disclose his or her assigned function within the City and interest or the interest of his or her immediate family in the proposed Contract and the nature of the intended Contract.

Florida Statute §112.313(12) Standards Of Conduct For Public Officers, Employees Of Agencies, And Local Government Attorneys controls contracting with City employees or board members, and provides as follows:

(12) EXEMPTION.--The requirements of subsections (3) and (7) as they pertain to persons serving on advisory boards may be waived in a particular instance by the body which appointed the person to the advisory board, upon a full disclosure of the transaction or relationship to the appointing body prior to the waiver and an affirmative vote in favor of waiver by two-thirds vote of that body. In instances in which appointment to the advisory board is made by an individual, waiver may be effected, after public hearing, by a determination by the appointing person and full disclosure of the transaction or relationship by the appointee to the appointing person. In addition, no person shall be held in violation of subsection (3) or subsection (7) if:

(b) The business is awarded under a system of sealed, competitive bidding to the lowest or best bidder and:

1. The official or the official's spouse or child has in no way participated in the determination of the bid specifications or the determination of the lowest or best bidder;

2. The official or the official's spouse or child has in no way used or attempted to use the official's influence to persuade the agency or any personnel thereof to enter such a contract other than by the mere submission of the bid; and

3. The official, prior to or at the time of the submission of the bid, has filed a statement with the Commission on Ethics, if the official is a state officer or employee, or with the supervisor of elections of the county in which the agency has its principal office, if the official is an officer or employee of a political subdivision, disclosing the official's interest, or the interest of the official's spouse or child, and the nature of the intended business.

26. TRUTH-IN-NEGOTIATIONS CERTIFICATE: If applicable, execution and signature by the vendor of the Bid Form shall act as the execution of a truth-in-negotiation certificate certifying that the wage rates and costs used to determine the compensation provided for in this Contract are accurate, complete, and current as of the date of the Contract.

For professional service Contracts, the original Contract price and any additions thereto will be adjusted to exclude any significant sums by which the City determines the Contract price was increased due to inaccurate, incomplete, or noncurrent wage rates and other factual unit costs. The City shall exercise its rights under this "Certificate" within one (1) year following payment.

27. GRANT FUNDING: In the event any part of the Contract is to be funded by federal, state, or other local agency monies, the vendor hereby agrees to comply with all requirements of the funding entity applicable to the use of the monies, including full application of requirements involving the use of minority firms, women's business enterprises, and labor surplus area firms. Vendors are advised that payments under the Contract may be withheld pending completion and submission of all required forms and documents required of the vendor pursuant to the grant funding requirements. A copy of the requirements shall be supplied to the vendor by the City upon request.

28. PERFORMANCE/PAYMENT BOND: The successful bidder shall provide the required performance and payment bond or other acceptable security to the City within **ten (10) business days of being awarded the bid. Failure by the successful bidder to provide the bond within ten (10) business days shall be considered a default under Sec. 2-404 of the City of North Port Administrative Code.** Such default shall only be curable at the option of the City. In addition, the Contractor shall be responsible and bear all costs associated to record Performance and Payment Bond with Sarasota County Clerk's Office. Receipt of said recording and certified copy of the bond shall be furnished to the Purchasing Department at the time of the pre-construction meeting. Such default shall only be curable at the option of the City.

In addition, the Contractor shall be responsible and bear all costs associated to record Performance and Payment Bond with Sarasota County Clerk's Office. Receipt of said recording and certified copy of the bond shall be furnished to the Purchasing Department at the time of the pre-construction meeting. Such default shall only be curable at the option of the City.

Upon such default the City may immediately award the bid to the next lowest responsive and responsible bidder, and recover from the original successful bidder the difference in cost between the original winning bid and the next lowest responsive and responsible bidder.

PERFORMANCE/PAYMENT BOND REQUIREMENTS:

The Contractor shall provide a Performance Bond and a Payment Bond, in the form prescribed in Section 3, Contract Documents, each in the amount of 100% of the Contract amount, the costs of which are to be paid by the Contractor. The bonds will be acceptable to the City only if the following minimum conditions are met:

- a. is licensed to do business in the State of Florida;
- b. holds a certificate of authority authorizing it to write surety bonds in this state;
- c. has twice the minimum surplus and capital required by the Florida Insurance Code at the time the invitation to bid is issued;
- d. is otherwise in compliance with the provisions of the Florida Insurance Code; and
- e. holds a currently valid certificate of authority issued by the United States Department of Treasury under 31 U.S.C. §§ 9304-9308.
- f. The Surety Company must have a current rating of at least Excellent (A or A-) as reported in the most current Best Key Rating Guide, published by A.M. Best Company, Inc., of 75 Fulton Street, New York, New York 10038, with an underwriting limitation **of at least two times the dollar amount of the contract.**

If the Surety Company for any Bond furnished by the Contractor files for bankruptcy, has a receiver appointed, is declared bankrupt, becomes insolvent, has an assignment made for the benefit of creditors, has its right to do business terminated in the State of Florida, or ceases to meet the requirements imposed by the Contract Documents, the Contractor shall, within five (5) calendar days thereafter, substitute another Bond and Surety Company, both of which shall be subject to the City's approval.

By execution of these bonds, the Surety Company acknowledges that it has read the surety qualifications and surety obligations imposed by the Contract documents and hereby satisfies those conditions.

29. STATE REGISTRATION REQUIREMENTS: Any bidder required by Florida law to register to do business in this state shall either be registered or have applied for registration with the Florida Department of State in accordance with the provisions of Chapter 607, 608, 617, or 621, Florida Statutes, unless they are exempt. A copy of the registration/application may be required prior to award of a contract. Any partnership submitting a bid in response

to this RFB shall have complied with the applicable provisions of Chapter 620, Florida Statutes.

30. NOTICE TO PROCEED/DELIVERY: After award of bid, a Notice to Proceed shall be issued bearing the terms of delivery. Upon receipt of Notice to Proceed, successful bidder shall acknowledge receipt of same by either fax or mail and shall commence prosecution of the order so that the agreed upon delivery date will be satisfied.

31. PERFORMANCE EVALUATION: At the end of the Contract, the receiving department may evaluate the successful bidder's performance. This evaluation will become public record.

32. PURCHASING AGREEMENTS WITH OTHER GOVERNMENTAL AGENCIES: All bidders submitting a response to this RFB agree that such response also constitutes a bid in accordance with the terms of the RFB to all political subdivisions of Sarasota County and the State of Florida, under the same conditions, for the same prices as this bid, unless otherwise stipulated by the bidder.

33. NONEXCLUSIVE CONTRACT: Award of this Contract shall not require the City to use the Vendor for all work of this type, which may develop during the Contract term. This Contract is non-exclusive. The city reserves the right to concurrently Contract with other entities for similar work if it deems such action to be in the best interests of the City.

34. AUDIT: City shall have the right to audit vendor's records that relate to this Contract. Records shall be maintained for a period of three (3) years from the date of final payment.

35. UNAUTHORIZED ALIEN WORKERS: The City will not intentionally award publicly-funded contracts to any Contractor who knowingly employs unauthorized alien workers, constituting a violation of the employment provisions contained in U.S.C. Section 1324a(e) [Section 274A(e) of the Immigration and Nationality Act ("INA")]. The City shall consider employment by any Contractor of unauthorized aliens a violation of Section 274A(e) of the INA. Such violation by the Contractor of the employment provisions contained in Section 274A(e) of the INA shall be grounds for termination of this Agreement by the City.

36. E- VERIFY: The City, contractor and every subcontractor shall register with and use the E-Verify system of the United States Department of Homeland Security to verify the work authorization status of all new employees as required by Section 448.095, Florida Statutes. A contractor who enters into a contract with a subcontractor, must require that the subcontractor provides the contractor a certification by affidavit stating that at the time of such certification and during the term of the contract, the subcontractor does not and will not employ, contract, or subcontract with an unauthorized alien, who is not authorized under federal law to be employed in the United States, as described in 8 U.S.C. S. 1324A(H)(3). The Contractor shall comply with all other federal laws pertaining to the subcontractor.

37. EMPLOYEE BACKGROUND CHECK: If an owner, except a stockholder in a publicly traded corporation, or an employee of the Contractor has been convicted of any offenses requiring registration as a sexual offender or sexual predator, regardless of the location of conviction, the Contractor shall ensure that the offender's or predator's work on the project is consistent with the terms of his probation and registry requirements.

38. PAYMENT: One (1) original requests for payment must be submitted to the City of North Port on a form approved by the City. In lieu of the hard copies of the pay request submittal, scanned signed digital files of the requests for payments may be submitted as an attachment to an e-mail. Each pay request must be accompanied by written consent of the surety, when applicable, and an updated work schedule to reflect progress of work. Payment shall be subject to the approval and direction of the surety in accordance with F.S. §255.05(11). Price shall be net and all invoices payable according to the Florida Local Government Prompt Payment Act (F.S. ch. 218). Upon certification and approval by the City or its duly authorized agent, progress payments may be made to the Contractor upon his/her application for

all services or work completed or materials furnished in accordance with the Contract. Prior to fifty percent (50%) completion, the Contractor will be paid monthly the total value of the work completed and accepted during the preceding month, less five percent (5%) retainage. After fifty percent (50%) completion of the construction services purchased pursuant to the Contract, the City will not reduce the amount of retainage withheld from each subsequent progress payment made to the Contractor upon request of the Contractor. For purposes of this subsection, the term "fifty percent (50%) completion" is the point at which the City has expended fifty percent (50%) of the total cost of the construction services purchased as identified in the Contract together with all costs associated with existing change orders and other additions or modifications to the construction services provided for in the Contract. The City shall inform the Contractor's Surety of any reduction in retainage. The Contractor must update each new pay request in accordance with any changes made to the previous submittal. The City or its duly authorized administrative agent, shall approve final payment for all work, materials and services furnished under this Contract.

Retainage may be reduced upon issuance of the Certificate of Substantial Completion by the City if, in the sole opinion of the City, sufficient progress on the schedule has been accomplished, the surety does not object, and the City has retained adequate coverage for the project through the achievement of Final Completion.

39. MBE: Contractors awarded construction contracts who intend to subcontract material or service requirements of the project are encouraged to subcontract to certified minority business/women business enterprises firms or show good faith effort.

40. DBE Contract Assurance (IF APPLICABLE): The contractor, sub-recipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

41. SWORN STATEMENT, COMPLIANCE WITH FLORIDA TRENCH ACT: Bidder shall be solely responsible for complying with the Florida Trench Safety Act (553.60-553.64 Florida Statutes) and Occupational Safety and Health Administration excavation safety standards, 29 CFR 1926.650 (subpart P) as amended. All costs associated with complying with these requirements shall be included in the separate line items of the bid and shall be as detailed in the Sworn Statement of Compliance with the Florida Trench Safety Act. Bidder shall submit the Statement of Compliance with the Florida Trench Safety Act form provided herein with his bid or with each work assignment.

42. INSURANCE REQUIREMENTS: The successful Bidder shall be required to supply, at their cost, insurance coverage in form and amount as required by the City, as outlined in the bid specifications.

43. CONTACT PROHIBITION: All prospective Bidders are hereby instructed **NOT** to contact any member of the City of North Port Commission, the City Manager, or City of North Port staff member other than the Authorized Contact Persons identified in this Solicitation regarding this solicitation package, Bidder's submittal package, City's Intent to Award, or City's Intent to Reject (if applicable) at any time prior to the FORMAL AWARD for this project. Any such contact shall be cause for rejection of your submittal.

44. SCRUTINIZED COMPANIES:

A. As required by section 287.135(5), Florida Statutes, for contracts of \$1,000,000.00 or less, when submitting a bid or proposal, and prior to entering into a contract with the City, every person or entity shall certify on a form provided by the City, that it is not on the Scrutinized Companies that Boycott Israel List, created pursuant to section 215.4725, Florida Statutes, and that it is not engaged in a boycott of Israel.

B. As required by section 287.135(5), Florida Statutes, for contracts of \$1,000,000.00 or more, when submitting a bid or proposal, and prior to entering into a contract with the City, every person or entity shall certify on a form provided the City, that all of the following are true:

1. It is not on the Scrutinized Companies that Boycott Israel List, created pursuant to section 215.4725, Florida Statutes, and that it is not engaged in a boycott of Israel; and
2. It is not on the Scrutinized Companies with Activities in Sudan list or the Scrutinized Companies with Activities in Iran Petroleum Energy Sector list, created pursuant to section 215.473, Florida Statutes; and
3. It is not engaged in business operations in Cuba or Syria.

C. PENALTY:

1. If a false certification is submitted or the person or entity has been placed on one of the above-noted Lists of Scrutinized Companies or has engaged in business operations in Cuba or Syria, the person or entity will be in breach of the Contract terms and the City may terminate the Contract.
2. A person or entity that has been found to have provided a false certification may be subject to a civil penalty equal to the greater of \$2 million or twice the amount of the Contract, plus all reasonable attorney's fees and costs, including any costs for investigations that led to the finding of the false certification; and
3. A person or entity that has been found to have provided a false certification shall be ineligible to bid on any contract with the City for three (3) years after the date the City determined that a false certification has been submitted.

45. LOCAL PREFERENCE: Bidder may claim Local Preference if Bidder qualifies under the definition below and in accordance with Ordinance 2009-10, as may be amended by the City of North Port.

A. Local Business Definition:

Preference shall be given to a "local business **OR** North Port local business" in the purchase of commodities and services procured pursuant to this Section. Bidders desiring to receive preference as a local business will be required to affirmatively state and provide documentation as set forth in the solicitation in support of their status as a local business. Any bidder who fails to submit sufficient documentation with their bid shall not be granted local preference consideration for the purpose of that specific contract award.

"Local business" means a bidder that maintains a physical business address located within the limits of Sarasota County, Charlotte County or DeSoto County for a period of six (6) months or more before the bid submission date from which the bidder operates or performs business and where at least fifty percent (50%) of the bidder's employees are residents of the City. Post office boxes may not be used to establish a physical business address.

"North Port local business" means a local business that has its primary physical business address located within the limits of the City for a period of six (6) months or more before bid submission date, from which the bidder operates or performs business and where at least fifty percent (50%) of the bidder's employees are residents of the City. Post office boxes may not be used to establish a physical business address.

If requested by the City, the bidder will be required to provide documentation substantiating the information given in this affidavit. City reserves the right to request supporting documentation as evidence to substantiate the information given in this affidavit. Failure to do so will result in the bidder's submission being deemed non-responsive.

Any bidder that misrepresents its status as a local business shall be barred from receiving any City contracts for a period of three (3) years.

B. Local Price Match Option:

Each formal competitive bid solicitation shall clearly identify the criteria for award. When a responsive and responsible bidder who is not a local business (hereafter, non-local business bidder) submits the lowest bid price (hereafter, low bid), all responsive and responsible local business and North Port local business bidders shall have five (5) business days to submit an offer to match the low bid, provided the original bid submitted by the local business bidder is within ten percent (10%) of the low bid if the amount of the low bid is no more than one million dollars (\$1,000,000). If the amount of the low bid is more than one million dollars (\$1,000,000) but no more than 2 million dollars (\$2,000,000), local business and North Port local business bidders within five percent (5%) shall have the opportunity to match the low bid. If the amount of the low bid is more than two million dollars (\$2,000,000) but no more than 3 million dollars (\$3,000,000), local business and North Port local business bidders within three percent (3%) shall have the opportunity to match the low bid. If the amount of the low bid is more than three million dollars (\$3,000,000), local business and North Port local business bidders within two and one-half percent (2.5%) shall have the opportunity to match the low bid. The original lowest responsive and responsible North Port local business bidder who matches the low bid shall receive the award. If no eligible North Port local business bidder can match the low bid, the award shall be made to the original lowest responsive and responsible local business bidder who matches the low bid. If no eligible local business bidder can match the low bid, the award shall be made to the lowest responsive and responsible bidder, regardless of local business status.

If there is a tie between a local business and a non-local business, the local business shall receive the award. If there is a tie between two North Port local businesses or two local businesses, the business with the higher percentage of employees who reside within the City shall receive the award.

- 46. CONFLICTS OF INTEREST – CITY OFFICERS, EMPLOYEES OR BOARD MEMBERS:** The Florida Code of Ethics regulates the ability of the City to contract with its public officers (including board members), employees, and their immediate relatives. Respondents shall disclose any such potential conflicts on the provided Conflict of Interest Form. Respondents are responsible for reviewing Florida Statute §112.313 to determine whether they may have a conflict. If Respondent is in doubt as to their ability to contract with the City, they shall seek a conflict of interest opinion from the City Manager or his/her designated representative prior to submittal of a response.
- 47. RELEASE OF LIENS:** The Contractor is required to pay all money due subcontractors and material dealers promptly. The Contractor shall submit releases of liens, satisfactory to the City, certifying that all payrolls, material bills, her indebtedness incurred by the Contractor in connection with this project have been paid in full.
- 48. DIRECT PURCHASE:** The City reserves the right, at the City's sole option, to utilize the Purchasing Department's direct purchase order system. Direct purchase orders may be issued for applicable supplies and equipment to utilize in this project in order to recover applicable sales tax on these purchase orders.
- 49. BUY AMERICA:** The City is committed to the procurement of products and services that are produced or manufactured in America. The city encourages all contractors and vendors to buy American made materials and products.
- 50. Prohibition Against Considering Social, Political or Ideological Interests in Government Contracting -- F.S.**

287.05701: Bidders are hereby notified of the provisions of section 287.05701, Florida Statutes, as amended, that the City will not request documentation of or consider a Bidder's social, political, or ideological interests when determining if the Bidder is a responsible Bidder. Bidders are further notified that the City's governing body may not give preference to a Bidder based on the Bidder's social, political, or ideological interests.

51. Verification of Employment Status - Everify

The Contractor is required to be registered with the U.S. Department of Homeland Security's E-Verify system prior to entering into a contract with City of North Port. The Contractor shall use the E-Verify system to verify the employment eligibility of all new employees hired by the Contractor during the contract term.

The Contractor shall include an express provision in all of its subcontracts requiring subcontractors, who perform work or provide services pursuant to the contract, to use the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the contract term. For more information on this process, please refer to United States Citizenship and Immigration Service site at:

<http://www.uscis.gov/portal/site/uscis>

Only those employees determined eligible to work within the United States shall be employed under this contract.

By submission of a bid in response to this solicitation, the Contractor affirms that all employees in the above categories shall undergo e-verification before placement on this contract. The Contractor shall commit to comply with this requirement by completing the E-Verification certification, attached to this solicitation.

A public employer, contractor, or subcontractor who has a good faith belief that a person or entity with which it is contracting has knowingly violated Section 448.09(1), Florida Statutes is obligated to terminate the contract with the person or entity pursuant to Section 448.095(2)(c)1, Florida Statutes. If City of North Port terminates the contract for the foregoing reason, the contractor may not be awarded a public contract for at least one (1) year after the date on which the contract was terminated, and the contractor will be liable for any additional costs incurred by City of North Port as a result of the termination of the contract.

END OF SECTION I

SECTION II. GENERAL PROVISIONS

1. SCOPE OF WORK

1.1 Intent of Contract: Bid forms shall set forth firm bid unit prices for furnishing all necessary materials and completing all work, including but not limited to labor, transportation, supervision, electricity, water, equipment, startup, testing, training and all other work needed for a complete and operational system, as described in the Technical Specifications and/or shown on the Contract Drawings attached herewith. The City reserves the right to establish the exact limits of work in the field and to add or delete from the Project, as it deems necessary.

The intent of the Technical Specifications and Contract Drawings is to describe a complete project to be constructed in accordance with the Contract Documents. The Contract Documents comprise the entire Agreement between the City and the Contractor. They may be altered only by addendum or change order approved by the City.

1.2 Definitions:

1.2.1 The successful bidder for this Contract will be referred to as the **CONTRACTOR**; Department Director or his/her representative, acting personally or through an assistant duly authorized for such act by the City will be referred to as City. For the purposes of this Contract, the word "Project" shall mean the services limits of **CONTRACTOR**.

1.2.2 The Contract documents consist of the Request for Bids, Instructions to Bidders, Bid Forms, Technical Specifications, Construction Drawings, General Provisions, Special Provisions, Insurance Requirements, and all other related documents, including all modifications thereof incorporated in the documents before their execution. These form the Contract.

1.2.3 Written notice shall be deemed to have been duly served three days after date of postmark, and upon receipt, if delivered to the individual or member of the firm or an officer of the corporation for whom it is intended.

1.2.4 Subcontractor(s), as employed herein, includes only those having a direct Contract with the Contractor and it includes one who furnishes material worked to a special design according to the plans and specifications of this work, but does not include one who merely furnishes material not so worked.

1.2.5 The term "work" of the Contractor includes labor or materials or both, equipment, transportation, or other facilities necessary to complete the Contract.

1.2.6 All time limits stated in the Contract documents are of essence to the Contract.

1.2.7 The words "furnish," "furnish and install," "install," and "provide" or words with similar meaning shall be interpreted, unless otherwise specifically stated, to mean "furnish and install complete in place and ready for service."

1.3 Time of Completion: The Contractor shall complete the work within the time set forth in the Contract. The Contractor shall complete each portion of the work within such time as set forth in the Contract for such portion. The time of completion of the Contract shall be expressed in calendar days.

All work for this project shall be performed during regular business hours. A regular workday shall be considered to be a maximum of eight and one half (8.5) hours duration. The cost for inspection time for work performed on weekends, holidays, or in excess of ten (10) hours may be billed to the Contractor at the prevailing wage plus

overhead costs for those persons involved.

A working day is any day within the period between the start of the Contract time and the date provided in the Contract for completion or upon field acceptance by the City of all work provided for in the Contract, or as stipulated in the Technical Specifications, or whichever comes first, other than: Saturday, Sunday, any day designated as a holiday by the City, any day the Contractor is prevented from working during the first five (5) hours of the work day, with at least sixty percent (60%) of the normal work force, due to inclement weather.

Request for planned overtime by the Contractor must be submitted in writing to the City, forty-eight (48) hours in advance, and may not proceed without the City's approval.

1.4. Quality of Work: The Contractor agrees to do the work covered under this Contract to the best of his/her ability and conforming to this Contract and specifications and of a quality acceptable to the trades. The Contractor further agrees to follow proper and appropriate instructions by the City.

2. PROSECUTION AND PROGRESS

2.1 Subletting or Assigning of Contracts: The Contractor shall not sublet, sell, transfer, assign, or otherwise dispose of the Contract or any portion thereof, or his right, title, or interest therein, without written consent of the City.

2.2 Pre-construction Meeting: After the Contract has been awarded, the City will schedule a preconstruction meeting to be held before any work is begun to review the construction aspects of the Project. The meeting will be between the City, the Contractor and various utility companies that will be affected by the construction.

2.3 Performance and Payment Bond: The awarded Contractor shall furnish a certified recorded copy from Sarasota County Clerk's Office of the Performance and Payment Bond in the amount of 100% of the total project price within ten (10) calendar days after notification of award to the Purchasing Department. The undersigned shall be responsible and bear all costs associated to record Performance and Payment Bond with Sarasota County Clerk's Office. Receipt of said recording and a certified copy of the Bond shall be furnished to the Purchasing Department at the time of the pre-construction meeting.

2.4 Submission of Work Schedule/Order of Completion: At the preconstruction meeting, the successful bidder shall have on hand a working schedule for the Project, showing in detail the order in which the Contractor proposes to perform the work. He/she shall indicate the dates on which major equipment will be delivered and various major items of work will start and the estimated completion dates of the major items. Construction Schedule provides additional information for ongoing scheduling requirements associated with this Contract.

2.5 Submission of Schedule of Values: A Schedule of Values to reflect value of equipment, materials and work performed per unit price, with totals shall be submitted at preconstruction meeting. Both parties are to agree on proposed schedule of values prior to any work being performed.

2.6 Provisions for Convenience of Public: The Contractor shall schedule his/her operations so as minimize any inconvenience to adjacent businesses for residences. Where necessary, the City may require the Contractor to construct first the work in any areas along the Project where restrictions caused by construction operations would represent a more serious handicap, before beginning construction in the less affected areas.

3. CONTROL OF THE WORK AND MATERIALS

3.1 Control of Work:

3.1.1 Plans and Contract Documents: If required for the project, the Contractor will be furnished a universal serial bus flash drive and four (4) signed and sealed 11"x17" copies of the Plans, Technical Specifications, General and Special Provisions. Additional signed & sealed copies, if needed to obtain permits for the Work associated with this Contract, will be submitted upon written request. Other copies that may be needed by the Contractor shall be produced by the Contractor at his own expense; or, the Contractor may request additional full-size hardcopy of the plans for a cost of \$50.00 for each set of plans. Check shall be written out to North Port Utilities (NPU) and brought to Utilities' Field Office in exchange for plans.

3.1.2 Detail Drawings and Instructions: The City may furnish, with reasonable promptness, additional instructions by means of drawings or otherwise, necessary for the proper execution of the work. All such drawings and instructions shall be consistent with the Contract documents, true developments thereof, and reasonably inferable there from.

3.1.3 Order of Precedence: These documents are integral parts of the Contract, and a requirement occurring on one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In cases of discrepancy, the governing order of documents shall be as follows:

- 3.1.3.1** Permits from Agencies as required by law
- 3.1.3.2** Change Orders
- 3.1.3.3** Contract Documents, General Provisions and Special Provisions in that order
- 3.1.3.4** Technical Specifications
- 3.1.3.5** Construction Plans
 - 3.1.3.5.1** Dimensions given in figures govern scaled dimensions.
 - 3.1.3.5.2** Detail drawings govern over general drawings.
 - 3.1.3.5.3** Addenda/Change order drawings govern over Contract documents.
- 3.1.3.6** FDOT Roadway and Traffic Design Standards, January, latest edition (if applicable).
- 3.1.3.7** FDOT Standard Specifications, for Road & Bridge Construction, latest edition (if applicable).
- 3.1.3.8** North Port Utilities Standard Details and Specifications

3.1.4 Conformity of Work with Plans: All work performed and all materials furnished shall be in reasonably close conformity with lines, grades, cross sections, dimensions, and material requirements, including tolerances, shown on the Plans or indicated in the Technical Specifications or Special Provisions.

3.1.5 Authority of the City: All work shall be done under the supervision of the City or the City's representative and performed to its satisfaction. It is agreed by the parties hereto that the City shall decide all questions and disputes which may arise relative to the interpretation of the plans, construction, prosecution, and fulfillment of the Contract, and as to the character, quality, amount, and value of any work done, and material furnished, under or by reason of the Contract.

3.1.6 City's Status: The City and/or the City's Representative shall examine and inspect the work to assure compliance with the requirements of these Contract Documents. The City and/or the City's Representative shall determine the quality and acceptability of materials and workmanship relative to the requirements of the Plans and Technical Specifications.

The City has the authority to:

- 3.1.6.1** Stop the work whenever such stoppage may be necessary to insure the proper execution of the Contract.

3.1.6.2 Reject all work that does not conform to the Contract.

3.1.6.3 Resolve questions that arise in the execution of the work.

The City's Representative has the authority to:

3.1.6.4 Reject all work that does not conform to the Contract.

3.1.6.5 Resolve questions that arise in the execution of the work.

3.1.7 *Suspension of Work:* The City may at any time suspend work by giving ten (10) calendar days' notice to the Contractor in writing. The City shall reimburse the Contractor for expenses incurred by the Contractor in connection with work under the Contract as a result of such suspension, unless such suspension was caused by actions of the Contractor. However, if the work or any part thereof shall be stopped by a notice in writing aforesaid, and if the City does not give written notice to the Contractor to resume work within thirty (30) calendar days of the date fixed in the written notice to suspend, then the Contractor will be entitled to the estimates and payment for all work done, unless such suspension was caused by actions of the Contractor.

3.1.8 *The City's Right to do Work:* If the Contractor should neglect to prosecute the work properly or fail to perform in accordance with the provisions of this Contract, the City, after three days written notice, may without prejudice to any other remedy it may have, make good any deficiencies and deduct from the payment due the Contractor.

3.1.9 *The City's Right to Terminate Contract:* If the Contractor refuses or fails to complete the work within the time specified for this Contract, or any extension thereof, the City may terminate the Contractor's right to proceed. In such event, the City may take over the work and prosecute the same to completion by the Contract or otherwise and the Contractor will be liable for any excess cost occasioned by the City. The City may take possession of and utilize in completing the work such materials and equipment as may be on the site of the work and necessary therefore.

If the Contractor should be adjudged bankrupt, or should make a general assignment for the benefit of his/her creditors, or if a receiver should be appointed due to insolvency, or if he/she should refuse or fail, except in cases which a time extension is provided to supply enough workmen, or if he/she should fail to make payment to subcontractors for labor and/or material, or disregard laws, ordinances or the instructions of the City, or be guilty of a violation of a provision of the Contract, then the City may, without prejudice to any other right or remedy and after giving seven (7) calendar days' notice, terminate employment of the Contractor and possess materials, tools, and appliances thereon and finish work by methods it may deem expedient. Expenses incurred by the City and the damage incurred through the Contractor's default shall be borne by the Contractor.

In any circumstance, the City shall have the right to unilaterally cancel, terminate or suspend this Contract, in whole or in part, by providing the Contractor thirty (30) calendar days written notice by certified mail.

In the event of termination, the Contractor shall be entitled to compensation for services rendered and costs incurred through the effective date of termination. All finished or unfinished documents, material, or work shall become the property of the City and shall be delivered to the City without reservation.

3.1.10 *City May Stop the Work:* If the Work is defective, or the Contractor fails to supply sufficient skilled supervisory personnel or workmen or suitable materials or equipment or the work area is deemed unsafe, the City may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the City to stop the Work shall not give rise to any duty on the part of

the City to exercise this right for the benefit of the Contractor or any other party. The City will not award any increase in Contract Price or Contract Time if the Work is stopped due to the circumstances described herein.

3.1.11 City's Decision: The City shall, within a reasonable time after their presentation, make decisions in writing on claims by the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the Contract Documents.

3.1.12 Authority and Duties of City's Inspectors: The City's Inspectors shall be authorized to inspect all work done and all materials furnished. They shall be authorized to call to the attention of the Contractor any failure of the work or materials to conform to the Technical Specifications and Contract. The presence of the Inspector shall in no way lessen the responsibility of the Contractor.

3.1.13 Inspection of Work: The City and its representative shall at all times have access to the work wherever it is in preparation or progress and the Contractor shall provide proper facilities for such access and inspection. If the Specifications/Conditions, the City's instruction, laws, ordinances or any public authority require any work to be specially tested or approved, the Contractor shall give to the City timely notice of its readiness for inspection and, if the inspection is by an authority other than the City, the date fixed for such inspection. Inspections by the City shall be promptly made and, where practicable, at the source of supply. If any work should be covered up without approval or consent of the City, it must, if required by the City, be uncovered for examination at the Contractor's expense. Re-examination of questioned work may be ordered and the work must be uncovered by the Contractor.

3.1.14 Contractor's Supervision and Employees: The Contractor shall supervise, inspect, and direct the work completely and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the work in accordance with the Contract Documents. The Contractor shall be solely responsible for the means, methods, techniques, sequence and procedures necessary for the orderly progress of the work, and to maintain all safety precautions and programs incidental thereto. The Contractor shall at all times enforce strict discipline and good order among his/her employees, and shall not employ any unfit person or anyone unskilled in the work assigned to him/her. The Contractor shall be responsible to see that the completed work complies fully with the Contract Documents.

The Contractor will employ and maintain on the Work a qualified supervisor or superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the site. The supervisor shall have full authority to act on behalf of the Contractor and all communications given to the supervisor shall be as binding as if given to the Contractor.

As the work progresses, the Contractor shall keep on the job at all times an English-speaking Supervisor, Superintendent or designee, technically qualified, who is an employee of the Contractor and who shall not be replaced without written notice and approval of the City. The Superintendent or his/her qualified designee shall be present at the job site and direct the work of subcontractors, as well as employees of the Contractor. This supervisor will be equipped with a communication device enabling him/her to contact suppliers, subcontractors or his/her office who in turn can convey necessary communications to others. The Contractor shall issue all communications to the City or his/her representative.

The Contractor's Superintendent shall be present on the job site **at all times** while work is in progress, and shall be available by phone for emergencies twenty-four hours per day, seven days per week. Failure to observe this requirement shall be considered suspension of the work by the Contractor until such time as such Superintendent is again present on the job.

If the Contractor, in the course of the work, finds any discrepancy between the drawing and the physical conditions of the site, or any errors or omissions in drawing, or in the construction layout points and instructions, he/she shall immediately inform the City, in writing, and the City shall promptly verify same. Any work done after such discovery will be done at the Contractor's risk.

Neither party shall employ or hire any employee of the other party without the concurrence of each party.

3.1.15 Contractor's Understanding: It is understood and agreed that the Contractor has, by careful examination, satisfied himself/herself as to the nature and locations of the work, the conformation of the ground, the character, quality, and quantity of materials to be encountered, the character of equipment and facilities needed prior to and during prosecution of the work under this Contract. No verbal agreement or conversation with any officer, agent, or employee of the City, either before or after execution of this Contract, shall affect or modify the terms or obligations herein contained.

3.1.16 Permits and Regulations: Permits and licenses necessary for the prosecution of the work shall be secured by the Contractor and paid for by the City, unless otherwise specified. The Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the specifications and drawings are at variance therewith, he shall promptly notify the City in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules, and regulations, and without such notice to the City, he/she shall bear all costs arising there from.

3.1.17 Protection of Work and Property: The Contractor shall continuously maintain protection of all his/her work from damage and shall protect the City's property from injury or loss arising in connection with this Contract. He/she shall adequately protect adjacent property as provided by law and the Contract Documents. He/she shall provide and maintain all passageways, guard fences, lights, and other facilities for protection required by public authority or local conditions. In an emergency affecting the safety of life or of the work, or of adjoining property, the Contractor, without special instruction or authorization from the City, is hereby permitted to act, at his discretion, to prevent such threatened loss or injury, and he/she shall so act, without appeal, if so instructed or authorized. Any compensation claimed by the Contractor on account of emergency work shall be determined by agreement between the Contractor and the City.

The Contractor shall not occupy private land outside of any easements or rights of way unless a written authorization has been signed by the property owner. It shall be the Contractor's responsibility to obtain and provide these agreements prior to construction, if required. Prior to the use of private lands, the Contractor shall submit a copy of the agreement(s) to the City. In the event the Contractor uses private property for any purpose without first having obtained the necessary approvals from the property owner and provided the necessary agreements to the City, the City will direct the Contractor in writing to immediately cease using such property.

Prior to application for final payment, the Contractor shall provide documentation from the owner of each piece of private property for which an agreement for use was provided, or for which the City has issued written notification to the Contractor, that each owner is satisfied with the manner in which the Contractor has restored the property. Final payment or reduction in retainage shall not be paid until such documentation is received by the City.

3.1.18 Changes in the Work: The City, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the work, the Contract sum being adjusted accordingly. Such work shall be executed under the conditions of the original Contract. The change and amount of compensation must be agreed upon in writing in a document of equal dignity herewith prior to any deviation from the terms of this Contract.

In giving instructions, the City shall have authority to make minor changes in the work, not involving extra cost, and not inconsistent with the purposes of the work. Except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the City; and no claim for an addition to the Contract sum shall be valid, unless ordered. Value of any such extra work or change shall be determined in one or more of the following ways:

- 3.1.18.1** By estimate and acceptance in a lump sum.
- 3.1.18.2** By unit prices named in the Contract or subsequently agreed upon.
- 3.1.18.3** By cost and percentage or by cost and a fixed fee.

If none of the previous methods are agreed upon, the Contractor, provided he/she receives an order as above, shall proceed with the work. In such case and also under case, he/she shall keep amendment in such form as the City may direct, a correct amount of the net cost of labor and materials, together with vouchers. The City shall certify to the amount, including reasonable allowance for overhead and profit, due to the Contractor. Pending final determination of value, no payment on changes shall be made. When requiring a change in the scope of services the Contractor shall notify the City by written notice that a change order is requested within five (5) days of any occurrence.

3.1.19 Deductions for Uncorrected Work: If the City deems it inexpedient to correct work injured or done not in accordance with the Contract, some equitable deductions from the Contract price shall be made thereof.

3.1.20 Delays and Extension of Time: If the Contractor should be delayed at any time in the progress of work by any act of negligence by the City or its employees or by any other Contractor employed by the City, or by changes ordered in the work, or by such causes beyond the Contractor's control, or by delay authorized by the City, or by any cause which the City shall decide to justify the delay, then the time of completion shall be extended for such reasonable time as the City may decide. However, no time delay shall be allowed if judged by the City to be caused by the Contractor's negligence.

No such extension shall be made for delay occurring more than seven (7) calendar days before claim therefore is made in writing to the City. In the case of a continuing cause of delay only one (1) claim is necessary. This article does not exclude the recovery of damages for delay by either party under other provisions in the Contract Documents.

3.1.21 Correction of Work Before Final Payment: All work, materials, whether incorporated in the work or not, all processes of manufacturer, and all methods of construction shall be at all times and places subject to the inspection of the City who shall be the final judge of quality and suitability of the work, materials, processes of manufacture, and methods of construction for the purposes for which they are used. Should they fail to meet City's approval; they shall be forthwith reconstructed, made good, replaced, and/or corrected, as the case may be, by the Contractor at his/her own expense. Rejected material shall be immediately removed from the site. If, in the opinion of the City, any portion of the work injured or not

performed in accordance with the Contract Documents, the compensation to be paid to the Contractor hereunder shall be reduced by such amount as the City, in its judgement, finds to be equitable.

3.1.22 Contractor Right to Stop Work or Cancel Contract: If the work should be stopped under an order of any court or other public authority for a period of three (3) months through no act or fault of the Contractor or of anyone employed by him, or if the City fails to pay the Contractor within thirty (30) calendar days of maturity and presentation of any sum certified by the City, then the Contractor may, upon seven (7) calendar days written notice to the City, stop work and terminate this Contract.

3.1.23 Removal of Equipment: In the case of annulment of this Contract before completion from any cause whatever, the Contractor, if notified to do so by the City, shall promptly remove any part or all of his equipment and supplies from property of the City and/or site of work, failing which the City has the right to remove such equipment and supplies at the Contractor's expense.

3.1.24 Use of Completed Portions: The City has the right to take possession of and use any completed or partially completed portions of the work, notwithstanding the time for completing the entire work of such portions may not have expired, but taking possession and use shall not be deemed an acceptance of any work not completed in accordance with the Contract Documents. If such prior use increases the cost of or delays the work, the Contractor shall be compensated as the City may determine and the City approves.

3.1.25 Payments Withheld: The City may withhold payment to the Contractor from loss on account of:

- 3.1.25.1** Defective Work not remedied.
- 3.1.25.2** Claims filed or evidence indicating probable filing of claims.
- 3.1.25.3** Failure of the Contractor to make payment properly to Subcontractors or for material/labor.
- 3.1.25.4** A reasonable doubt that the Contract can be completed for the balance then unpaid.
- 3.1.25.5** Damage to another Contractor
- 3.1.25.6** When the above grounds are removed, payment shall be made for amounts withheld because of them.

3.1.26 Damages: Any claim for damage arising under this Contract shall be made in writing to the party liable within a reasonable time of the first observance of such damage and not later than the time of final payment, except as expressly stipulated otherwise in the case of faulty work, and shall be adjusted by agreement.

3.1.27 Assignment: Neither party to the Contract shall assign the Contract or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any monies due or to become due to him/her hereunder without the previous written consent of the City.

3.1.28 Right of Various Interests: Before work being done by the City's forces or by other Contractor's forces, contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the City before such commencement, to secure the completion of the various portions of the work in general harmony.

3.1.29 Separate Contracts: The City reserves the right to let other Contracts in connection with this work. The Contractor shall afford other Contractors reasonable opportunity for the introduction and storage of their materials and execution of the work, and shall properly connect and coordinate his/her work with

theirs. If any part of the Contractor's work depends on proper execution or results upon the work of any other Contractor, the Contractor shall inspect and promptly report to the City any defects in such work that render it unsuitable for such proper execution and results. His/her failure to so inspect and report shall constitute an acceptance of the other Contractors work as fit and proper for the reception of his work, except as to defects, which may develop on the other Contractor's, work after execution of his work.

3.1.30 Subcontractors: The Contractor shall provide a list of Subcontractors with his/her proposal for approval. The Contractor shall be fully responsible for all acts and omissions of his Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that he is responsible for the acts and omissions of persons directly employed by him. Nothing in the Contract Documents shall create any contractual relationship between City or City's Engineer of Record and any Subcontractor or other person or organization having a direct contract with Contractor, nor shall it create any obligation on the part of City or City's Engineer of Record to pay or to see to the payment of any moneys due any Subcontractor or other person or organization, except as may otherwise be required by law. City or City's Engineer of Record may furnish to any Subcontractor or other person or organization, to the extent practicable, evidence of amounts paid to Contractor on account of specific Work done in accordance with the schedule of values.

Substitutions must be submitted in writing and shall be subject to the approval by the City. To insure proper execution of his/her subsequent work, the Contractor shall measure work already in place and shall at once report to the City any discrepancy between the executed work and the drawings.

Acceptance of any such Subcontractor, person or organization shall not constitute a waiver of any right of the City, City's Representative, or Engineer to reject defective Work, material or equipment; or, Work, material or equipment not in conformance with the requirements of the Contract Documents.

The divisions and sections of the Specifications and the identifications of any Drawings shall not control the Contractor in dividing the Work among Subcontractors or delineating the Work to be performed by any specific trade.

The Contractor agrees to bind specifically every Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of the City.

All Work performed for the Contractor by a Subcontractor shall be pursuant to an appropriate agreement between the Contractor and the Subcontractor.

The Contractor shall be responsible for the coordination of the trades, Subcontractors and materialmen engaged upon his Work.

- The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind Subcontractors to the Contractor by the terms of these General Conditions and other Contract Documents insofar as applicable to the Work of Subcontractors, and to give the Contractor the same power in regard to terminating any subcontract that the City may exercise over the Contractor under any provisions of the Contract Documents.
- The City, City's Representative, or Engineer will not undertake to settle any differences between the Contractor and his Subcontractors or between Subcontractors.
- If in the opinion of the City, City's Representative, or Engineer, any Subcontractor on the Project proves to be incompetent or otherwise unsatisfactory, he shall be replaced if and when directed in writing.

3.1.31 *Horizontal and Vertical Control:* Unless noted otherwise in the Contract documents, the Contractor shall be responsible for the layout of all Contract work. The Contractor shall employ or retain any/all professional services that are required by the Contract to complete the work. The Contractor shall carefully preserve benchmarks, reference points and stakes, and, in case of willful or careless destruction, be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

3.1.32 *Lands for Work:* The City shall provide the lands upon which the work under this Contract is to be done, except that the Contractors shall provide land required for the erection of temporary construction facilities and storage of material, together with the right of access to same.

3.1.33 *Cleaning Up:* The Contractor shall, at such times as may be required by the City, remove from the City's property and from all public and private property, at his/her own expense, all temporary structures, used materials and equipment, rubbish and waste materials resulting from his/her operations. All damaged areas will be restored by the Contractor to their original conditions and approved by the City. By submission of a bid, the Contractor assumes full responsibility for the associated expenses. There shall not be an increase in time or price associated with such removal, and payment to Contractor may be withheld until such work is completed.

3.1.34 *Guarantee:* The Contractor shall warrant all equipment furnished and work performed by him/her for a period of one (1) year from the date of written acceptance of the work, final completion by the City or as may be otherwise specified. Any faulty work or equipment will be fully corrected at no cost to the City and restored work will be warranted for one year from the date of acceptance, or as may be otherwise specified. This will not release additional warranties required by other sections or provided by individual suppliers.

The making and acceptance of final payment shall not waive any claim for faulty work appearing after final payment or for failure to adhere strictly to the Contract documents. If any part of the project is guaranteed for a longer period, such longer period shall prevail. Except as otherwise specified, all work shall be guaranteed by the Contractor against defects resulting from use of inferior materials, equipment or workmanship for one (1) year from the date of completion or written acceptance by the City, whichever is later.

3.1.35 *Responsibility Regarding Existing Utilities and Structures:* The existence and location of underground utilities indicated on the plans are not guaranteed and shall be investigated and verified in the field by the Contractor before submitting a bid. Excavation in the vicinity of existing structures and utilities shall be done by hand. The Contractor shall be responsible for any damage to, and for maintenance and protection of, existing utilities and structures from any damage resulting from said excavation. The Contractor is to include within his line item bid prices the costs to protect, support, relocate, or move (whether shown or not shown on the proposed project set of plans) all underground utilities, which may be in conflict with the construction of the proposed project.

3.1.36 *Accidents:* The Contractor shall provide equipment and medical facilities as necessary to supply first aid to anyone who is injured in connection with the work. The Contractor must promptly report in writing to the City accidents arising out of, or in conjunction with the performance of the work, whether in, or adjacent to, the site, which causes death, personal injury, or property damages, giving full details and statements of witnesses. If death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to the City. If a claim is made by anyone against the Contractor or

Subcontractor on account of an accident, the Contractor shall promptly report the facts in writing to the City, giving full details of the claim.

3.1.37 Stage Plans: Stage plans of structural alterations, cofferdams, dredging, furnished or approved by the City, shall be adhered to unless objected to in writing by the Contractor, but the submission or approval of stage plans by the City shall not relieve the Contractor of full responsibility for the work.

3.1.38 Measurement of Quantities: The quantities of work performed will be computed by the City on the basis of measurement taken by the City or its assistants, and these measurements shall be final and binding. All work computed under the Contract shall be measured by the City according to the United States Standard Measurement and Weights. The City does not assume any responsibility that the final quantities will remain in accord with estimated quantities, nor shall the Contractor claim misunderstanding or deception because of such estimate of quantities.

The estimated quantities of work to be done and material to be provided may be increased, decreased, or omitted, as provided herein. Any increase in quantities shall be approved by the City prior to any work.

3.1.39 Reference to Other Specifications: Where reference is made to specifications such as ASTM, AWWA or AASHTO, the latest edition shall be used.

3.1.40 Sanitary Facilities: The Contractor shall provide and maintain, in a sanitary condition, facilities for his/her employees as are required by local and state boards of health.

3.1.41 Quality of Equipment and Materials: To establish standards of quality, the City may, in the specifications, refer to products by name and/or catalog number. This procedure is not to be construed as eliminating from competition other products of equal quality by other manufacturers where fully suitable in design.

3.1.41.1 The Contractor shall furnish a complete list of proposed desired substitutions prior to signing of the Contract together with such engineering and catalog data as the City may require.

3.1.41.2 The Contractor shall abide by the City's judgment when proposed substitute items of equipment are judged unacceptable and shall furnish the specified item of equipment in such case. All proposals for substitutions shall be submitted in writing by the General Contractor. The City will approve or disapprove proposed substitutions in writing within a reasonable time.

3.1.42 Codes and Laws: The successful bidder shall comply with all Federal, State, Local Laws and Ordinances that affect the Contract in any way.

3.1.43 Traffic Control: The Contractor shall comply with the National Committee on Uniform Traffic Control and Devices (NCUTCD) standards established by the Federal Highway Commission and the 2016 (or most current) FDOT Standards for Traffic Control Through Work Zones and maintain safe conditions at all times.

3.1.44 Exploration and Reports: If reference is made to identification of reports of explorations and tests of subsurface, or other project specific, conditions at the site that have been used in preparing the Contract documents, it should be understood that these reports are not part of the Contract documents. The Contractor shall have full responsibility with respect to subsurface, or other project specific, conditions at the

site. Technical data, made available only at the Contractor's request, may not be sufficient for construction purposes. Additional investigations may be necessary for the purposes of carrying out the construction project. If the Contractor desires additional subsurface, or other applicable project specific, investigation, it will be done at his/her expense, prior to bidding. Limited Subsurface, or other project specific, reports for this project are available through NPU.

If the Contractor has elected not to make subsurface, or other project specific, investigation prior to bidding, he/she shall not be entitled to any extra compensation or Contract change orders due to conditions encountered.

3.1.45 Existing Structures: Drawing of physical conditions in or relating to existing surface and subsurface structures which are at or contiguous to the site that have been utilized by the consultant and/or the City in preparation of the Contract documents. The Contractor may rely upon the accuracy of the technical data contained in such drawing but not for the completeness thereof for the purpose of preparing or submitting a bid. Except as previously indicated, the Contractor shall have full responsibility with respect to physical conditions in or relating to such structures.

3.1.46 Report of Differing Conditions: If the Contractor believes that any technical data on which he/she relies is inaccurate, or if any physical conditions uncovered or revealed at the site differ materially from that indicated, reflected, or referred to in the Contract documents, the Contractor shall promptly, after becoming aware and before performing any work in connection therewith (except in emergency situations), notify the City in writing about the inaccuracy of difference. The City will promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto and advise the City in writing (with a copy to the Contractor) of the City's findings and conclusion. Contractor's cost of, or the time required for, performance of any part of the work under this contract, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the contract modified in writing accordingly.

No claim of the Contractor under this clause shall be allowed unless the Contractor has given the notice required; provided, however, the time prescribed therefore may be extended by the City.

No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this Contract.

3.1.47 Not Shown or Indicated: If an underground facility is uncovered or revealed at or contiguous to the site, which was not shown or indicated and of which the Contractor could not reasonably have been expected to be aware, the Contractor shall promptly, before performing any work (except in emergencies), identify the owner of such underground facility and give written notice thereof to that owner and to the City. The Contractor will review the underground facility to determine the extent to which the documents should be modified to reflect and substantiate the consequences of the existence of the underground facility. With City approval, the Contract documents will be amended or supplemented to the extent necessary. During such time, the Contractor shall be responsible for the safety and protection of such underground facility. The Contractor shall be allowed an increase or an extension of time, or both, to the extent that they are attributable.

3.1.48 Progress Meeting: Progress meetings will be conducted bi-weekly or as required if requested by Contractor or the City.

3.2 Storage of Materials

3.2.1 Contractor shall, at its expense, receive, unload, store in a secure place, and deliver from storage to the construction site all materials and equipment required for the performance of the Contract.

3.2.2 Contractor is not entitled to payment for same except for those materials which in City's discretion are properly stored and are going to be installed or incorporated into the construction of the Project within thirty (30) days of delivery to the construction site.

3.2.3 The storage facilities and methods of storing shall meet City's approval and shall be in accordance with manufacturer's recommendations, or City will not be obligated to pay for same.

3.2.4 Materials and equipment subject to degradation by outside exposure shall be stored in a weather tight enclosure provided by Contractor at its expense.

3.2.5 City may at its discretion require material to be stored in an air-conditioned location.

3.2.6 Provided the above conditions are met, the stored materials may be included in a subsequent Application for Payment if the Contractor also complies with the following:

3.2.6.1 An applicable purchase order is provided listing the materials in detail and identifying the Contract Documents, by name, with verification that the total value of the purchase order amount reconciles with the corresponding application for payment stored materials line item value.

3.2.6.2 Evidence that proper storage security is provided.

3.2.6.3 The City is provided legal title (free of liens or encumbrances of any kind) to the material that is stored or stockpiled.

3.2.6.4 The Contractor and/or its Subcontractor have provided insurance for the Stored Materials against loss, damage (from whatever source), or disappearance, including loss or theft prior to incorporation into the Work. By execution of the Contract, Contractor releases City from any responsibility for Stored Materials and assumes all liability for and risk of loss or damage, by whatever means, including City's alleged negligence, regardless of whether the City has paid for said Stored Materials.

3.2.7 Once any Stored Material is paid for by City, it shall not be removed from the designated storage area except for incorporation into the Work or upon subsequent written approval by City.

3.2.8 No Applications for Payment shall be submitted, nor payments made based on the value of materials stored at locations other than the Project, unless otherwise approved in writing by the City.

3.2.9 It is further agreed between the parties that the transfer of title and the City's payment for any Stored Material pursuant to the Contract Documents shall in no way relieve the Contractor of the responsibility for providing and installing such material in accordance with the requirements of the Contract Documents.

3.2.10 The Contractor warrants that title to all of the Work or Stored Materials covered by the Application for Payment will pass to the City either by incorporation in the Project or upon receipt of payment by the

Contractor, whichever occurs first, free and clear of all liens, claims, security, interest or encumbrance; and that none of the Work and none of the Stored Materials covered by the Application for Payments will have been acquired by the Contractor, or by any other person performing the Work at the site or providing materials and equipment to the Project, subject to an agreement under which an interest therein or encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such person.

- 3.2.11** In the event stored materials which City is paying for in advance of their being installed or incorporated into the Project pursuant to this Paragraph are not installed or incorporated into the Project within thirty (30) days of when they are delivered to the site, Contractor shall not be entitled to payment for any future stored materials on this Project and the amounts previously approved for payment for said materials shall be deducted from the Contractor's next application for payment.

END OF SECTION II

SECTION III. SPECIAL PROVISIONS

SP-01 INTENT: The purpose of this project is to obtain a competent, experienced and responsible Contractor to construct the project in accordance with the plans and specifications, in an expeditious manner that reasonably protects the public and adjacent property from the construction of the project.

The Contract Documents comprise the entire agreement between City and Contractor concerning the work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the project. The work specified herein shall consist of furnishing all supervision, labor, equipment, material and any incidentals required for the successful completion of all work as specified herein. All work shall conform within the limits as specified and shown and be in conformance with the appropriate Technical Specifications contained herein.

The plans, technical specifications, and other documents provided are intended to provide the Contractor with known conditions of the existing site and proposed work area. The Contractor is responsible to conduct any and all investigation, survey, or other activities required to fully understand the existing site and conditions that will be encountered during the project, and on which their bid will be based. Additional investigations may be necessary for the purposes of carrying out the construction project. The City of North Port will not consider or approve any claim for additional time or monetary compensation submitted by the Contractor caused by unknown site conditions or a failure by the Contractor to fully investigate and understand the full extent and nature of the work. This includes, but is not limited to, existing utilities as well as subsurface conditions.

SP-02 EQUIPMENT: The Contractor shall only use equipment, machines, or combination of machines that are in good and safe working condition. The equipment shall produce results that meet or exceed the Technical Specifications stated herein.

Equipment incapable of providing this will not be acceptable for use on this Project. The Contractor shall not use equipment which is unsafe or in need of repair. Work completed with equipment, which is not properly functioning, shall be deemed unacceptable.

SP-03 CONSTRUCTION SCHEDULE: The work will be substantially complete within **460 calendar days** with final completion within **60 calendar days** after attaining Substantial Completion as established by the City. The date for **Final Completion** of the Project shall be established as **520 calendar days after** Notice to Proceed.

The Contractor shall furnish copies of the Construction Schedule to the City when requested to perform the work as outlined in the Bid Form. The City will notify the Contractor of such as needed work and the Contractor will provide a Construction Schedule to the City within thirty (30) days of the City's notification. A project update meeting will be held bi-weekly, or as required during contract.

SP-04 PRE-CONSTRUCTION CONFERENCE: A Pre-Construction Conference will be held, at which time the Contractor shall submit the following for the City's approval or acceptance:

A telephone list specifying the name, address, office phone number and cell phone numbers of all subcontractors or suppliers to be used on this project. If the Contractor proposes to subcontract any survey work that may be required, the Contractor shall include the registration number of the surveyor. The

telephone list shall also include emergency telephone numbers. The Contractor shall include a 24-hour emergency telephone for the City's use, which the Contractor shall update as necessary throughout the project. The Contractor shall request, in writing, any changes in subcontractors or suppliers.

No change in subcontractors or suppliers shall be made without written consent and approval from the City.

- In addition to the telephone and facsimile numbers, the Contractor shall provide an e-mail address where emails can be sent. The e-mail address must be monitored at least daily and capable of transferring electronic files.
- The Contractor shall submit to the City a list of equipment the Contractor proposes to utilize on this project.
- The Contractor shall submit for City approval a paper copy and electronic copy of a Construction Schedule prepared using City approved software, and a Schedule of Progress Payment Requests.
- The Contractor shall also submit all other materials or mix designs, which will be used by the Contractor for this Contract.

Mobilization may not start until all submittals have been accepted by the City and/or City's Representative. Once approved, no changes will be allowed without the written approval of the City and/or the City's Representative.

The Contractor shall also provide, on a monthly basis, an update to the Construction Schedule reflecting changes made as a result of such reasons as weather, breakdowns, and unanticipated delays, as a means of better monitoring the project.

SP-05 PROGRESS MEETING: For this project, progress meetings shall be bi-weekly, or as requested by the Contractor or the City. The Contractor shall designate a representative to attend Progress Meetings held at the **on TEAMS or on the project site once under construction has mobilized**. The Contractor shall submit, at each meeting, up-to-date schedule information, a written projected schedule for the next two weeks, written claims for additional compensation, written claims for weather days to extend the Contract, results of all testing and Value Engineering Proposals. The City will use the updated schedule information to monitor the Contractor's production rate. Upon written notice from the City, the Contractor shall dedicate additional resources to increase the production rate such that the Contractor will be back on schedule. Failure to comply with the approved Construction Schedule shall result in the Contractor being considered in default and subject to suspension of this Contract. Contractor may request progress meetings be on a different schedule than bi-weekly provided the City can confirm work is proceeding expeditiously. City may require a return to bi-weekly progress meetings at any time.

SP-06 COOPERATION WITH UTILITIES: The Contractor shall notify all utility owner(s) affected by the construction prior to beginning work. Any expense of utility repair or other damage due to Contractor's operations shall be borne by the Contractor. Protection of utilities shall be the responsibility of the Contractor, who shall provide adequate protection to maintain proper service.

NOTE: The Contractor is to include within his bid prices, the costs to protect, and/or support, all above ground, overhead and underground utilities, which may be in conflict with the construction of this proposed project.

Attention is called to the Florida Underground Facility Damage Prevention and Safety Act defined in Florida Statute. This act provides for a "One Call Toll Free" telephone number to be used by all parties doing excavation, demolition or other underground construction.

SP-07 CONTRACT TIME: The Contractor specifically agrees that it will commence operations within a mutually agreed upon time following notification by the City to commence work and that all work to be performed under the provisions of this Contract shall be completed not more than **520 calendar days after** Notice to Proceed; subject only

to delays caused through no fault of the Contractor or acts of God. Time is of the essence in the performance of this Contract. The contract time includes up to fourteen (14) calendar days for City and/or City's Engineer of Record review of each submittal and resubmittal. There shall be no extension of time provided for modification and corrections or re-submittals to address deficiencies therein identified during the review by the City and/or City's Engineer of Record.

The work will be substantially complete within **460 calendar days**; with final completion within **60 calendar days** after attaining Substantial Completion as established by the City. City shall provide the Contractor with a listing of items to be corrected or completed (punch list) after Substantial Completion is issued. The punch list will identify the remaining items that must be addressed to the satisfaction of the City by the Contractor to meet his/her obligations under the Contract. The Contractor shall complete all items on the punch lists to the satisfaction of the City prior to submittal of the application for final payment.

All extensions to the Contract time for permitted delays shall be by Change Order and signed by the City.

SP-08 PROJECT COMPLETION: Project final completion shall be defined as "the stage in the progress of the Work where the Work is complete in accordance with the Contract Documents so that the City can begin to utilize the Work for its intended use, all punch list items are complete, and the Contractor has completely demobilized from the project area." Project final completion shall not be more than **520 calendar days**.

SP-09 LIQUIDATED DAMAGES: The work shall be completed within the contract time as required by SP-08 "PROJECT COMPLETION." The contract time shall include the preparation, submittal, review and approval of submittals, delivery of materials, and construction, assembly, adjustment and placement into service for beneficial use of all facilities covered under this Contract. The City of North Port shall issue a Notice of Completion when it has determined that the work identified in the contract has been completed per SP-08 "PROJECT COMPLETION."

The City and the Contractor hereby agree that time is of the essence on this Contract and the City will suffer damages if the work is not completed within the contract time as required by SP-07 "Contract Time". It is further recognized and agreed by the City and the Contractor that the determination of the exact value of the damages the City would suffer due to a delay in the Completion of the work would be a difficult, time consuming and costly process. It is therefore hereby agreed by the City and the Contractor that it is in their mutual interest to establish a figure of **TWO THOUSAND NINE HUNDRED AND FORTY DOLLARS (\$2,940.00)** as Liquidated Damages (but not as a penalty) to be paid by the Contractor to the City for each calendar day that Completion is delayed beyond the Contract Time. It is mutually agreed by the City and the Contractor that neither shall make any claim to increase or reduce the amount to be paid under Liquidated Damages as the result of any calculation of actual damages suffered by the City as the result of delay in the Completion of the work.

For all contracts, regardless of whether the contract time is stipulated in calendar days or working days, the City will count default days in calendar days. If the Contractor or, in case of his default, the surety fails to complete the work within the time stipulated in the Contract, or within such extra time that the City may have granted the Contractor or, in case of his default, the surety shall pay to the City, not as a penalty, but as liquidated damages, in the amount of **\$2,940.00** per calendar day in which work is not completed.

The City has the right to apply, as payment on such liquidated damages, any money the City owes the Contractor.

The City does not waive its right to liquidated damages due under the Contract by allowing the Contractor to continue and finish the work, or any part of it, after the expiration of the Contract Time including granted time extensions.

In the case of default of the Contract and the completion of the work by the City, the Contractor and his surety are

liable for the liquidated damages under the Contract, but the City will not charge liquidated damages for any delay in the final completion of the City's performance of the work due to any unreasonable action or delay on the part of the City.

The City considers the Contract complete when the Contractor has completed all work and the City has accepted the work. The City will then release the Contractor from further obligation except as set forth in his bond.

SP-10 DAMAGES: Areas adjacent to the construction that are damaged shall be repaired at the Contractor's expense. Restoration of adjoining areas shall be equal to or better than original condition and to the satisfaction of the City. Protection of personal property, utilities, structures, access drives, conduits, pavement, curbs, sidewalks, trees, and shrubs shall be the responsibility of the Contractor, who shall provide adequate protection to maintain proper service.

SP-11 CONTINUOUS PROSECUTION OF WORK: The Contractor shall continuously prosecute the work in accordance with the Contract Documents. Upon written direction from the City, the Contractor shall remove any personnel for the duration of the Contract, who fails to comply with the Contract Documents.

Once commencing the project, the operation must be continuously prosecuted during normal hours to its completion. At no time, shall the Contractor suspend work, for any reason for more than seven (7) calendar days, excluding delays granted for inclement weather. Should the Contractor fail to perform any work on the project for three (3) or more workdays, the Contractor shall submit a written request to the City, no less than twenty-four (24) hours in advance of the restart of work, to allow the City to schedule the required inspection personnel. No work may restart, prior to the expiration of the twenty-four (24) hour notice without the City's approval.

Correction of safety concerns will be given priority and shall be corrected as soon as practicable, but not later than 24 hours after discovery by the City and notification to the Contractor. Failure to comply with these Provisions and/or Technical Specifications shall result in the Contractor being considered in default and subject to suspension of this contract.

SP-12 SAFETY AND PROTECTION:

A. Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work. Contractor shall take all necessary precautions for the safety of and shall provide the necessary protection to prevent damage, injury or loss to:

- i. All employees on the work and other persons or organizations who may be affected thereby.
- ii. All the work and materials and equipment to be incorporated therein, whether in storage on or off the site.

B. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and underground facilities not designated for removal, relocation or replacement in the course of construction. Contractor shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of person or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

C. All personnel working within the City's right-of-way shall at all times wear City approved safety vests, including personnel who may only briefly be out of their vehicle (i.e., supervisors, truck drivers).

D. No open excavations are allowed on the project. Any pipe installation shall be backfilled properly the same day of work on such pipe area to allow safe passing of pedestrians and vehicles. The Contractor shall immediately remove any personnel who fail to conform to this requirement.

E. Contractor shall designate a responsible representative at the site whose duty shall be the prevention of

accidents. This person shall be the contractor's superintendent unless otherwise designated in writing by Contractor to City.

SP-13 CHANGES IN THE WORK: The City, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the work, the Contract sum being adjusted accordingly. Such work will be an **amendment to the contract** and shall require approval by the City Manager prior to prosecution of the additional work. The change and amount of compensation must be agreed upon in writing in a document of equal dignity herewith prior to any deviation from the terms of this Contract. In giving instructions, the City shall have authority to make minor changes in the work, not involving extra cost, and not inconsistent with the purposes of the work. Except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the City; and no claim for an addition to the Contract sum shall be valid, unless ordered.

Contingency: An amount added to an estimate to allow for items, conditions, or events for which the state, occurrence, or effect is uncertain and that experience shows will likely result, in aggregate, in additional costs. All contingency items will require approval from the Purchasing Manager or designee, the Finance Director and City Manager prior to any work being performed.

Value of any such extra work or change shall be determined in one or more of the following ways:

1. By estimate and acceptance in a lumpsum.
2. By unit prices named in the contract or subsequently agreed upon.
3. By cost and percentage or by cost and a fixed fee.
4. By Change order executed by CityManager
5. By Contingency Authorization (executed by City Manager).

If none of the previous methods are agreed upon, the Contractor, provided he receives an order as above, shall proceed with the work. In such case and also under case, he shall keep amendment in such form as the City may direct, a correct amount of the net cost of labor and materials, together with vouchers. The City shall certify to the amount, including reasonable allowance for overhead and profit, due to the Contractor. Pending final determination of value, no payment on changes shall be made.

SP-14 SUBCONTRACTING, SUBLETTING AND/OR ASSIGNMENT: Do not, sell, transfer, assign or otherwise dispose of the Contract or Contracts or any portion thereof, or of the right, title, or interest therein, without written consent of the City. If the Contractor chooses to sublet any portion of the Contract, the Contractor must provide a written request to sublet work to the City for approval. With the City's acceptance of the request, the Contractor may sublet a portion of the work, but shall perform with its own organization work amounting to **not less than 60%** of the total Contract amount. The request will be deemed acceptable by the City, for purposes of the City's consent, unless the City notifies the Contractor within five (5) business days of receipt of the request that the City is not consenting to the requested subletting.

Include in the total Contract amount the cost of materials and manufactured component products, and their transportation to the project site. For the purpose of meeting this requirement the City will not consider off-site commercial production of materials and manufactured component products that the Contractor purchases, or their transportation to the project, as subcontracted work.

If the Contractor sublets a part of a Contract item, the City will use only the sublet proportional cost in determining the percentage of subcontracted normal work. Execute all agreements to sublet work in writing and include all pertinent provisions and requirements of the Contract. All other agreements must be in writing and reference all applicable Contract provisions. Upon request, furnish the City with a copy of the subcontract and agreement. The

subletting of work does not relieve the Contractor or the surety of their respective liabilities under the Contract.

The City recognizes a subcontractor only in the capacity of an employee or agent of the Contractor and the Engineer may require the Contractor to remove the subcontractor as in the case of an employee.

All sublets will be in continued compliance with all Contract provisions and the Contractor will continue to perform the minimum percentage of Contract work with its own organization, as required by said Contract. It is recognized and agreed that the prime contractor remains responsible for the proper performance of all requirements of said contract and use of sublet does not relieve or release the Contractor and his surety or either of them of any liability under the contract bond. A false statement or omission made in connection with subletting is sufficient cause for suspension, revocation, or denial of qualification to bid, and a determination of non-responsibility, and may subject the person and/or entity making the false statement to any and all civil and criminal penalties available pursuant to applicable Federal and State Law.

SP-15 AVAILABILITY OF LANDS: Work is planned to occur within rights of way or existing utility easements. The Contractor will be held responsible to obtain right of way use permit(s) from the City of North Port. NPU will pay the permit fee directly to the Neighborhood Development Services Department. Any additional or repeat inspection or testing charges shall be paid by the Contractor. See Special Provision SP-17.

SP-16 COORDINATION OF THE SPECIFICATIONS: Where conflicts between the City of North Port General Provisions, Special Provisions, Technical Specifications and Construction Plans, references, should they exist, it is the responsibility of the bidding Contractor to bring those conflicts to the attention of the Purchasing Agent prior to the bid date. After bids, have been received, the contractor will be held to the most stringent requirement.

The Contractor shall take no advantage of any apparent error or omission in the plans or specifications. If the Contractor discovers such an error or omission, he shall immediately notify the City. The City will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the plans and specifications.

SP-17 CONSTRUCTION PERMITS: The following permits are required for this work: Florida Department of Environmental Protection Environmental Resource and Wastewater Collection Permits, Department of Health Permit, City of North Port Building permit and Southwest Florida Water Management Permit.

The City will pay for all permit fees by the Development Services Department, City of North Port Public Works Department, Southwest Florida Water Management District, Department of Health, and Florida Department of Environmental Protection. For this project, Right of Way (ROW) permit(s) will not be required. The City will make payment directly to the Development Services Department for any miscellaneous fees assessed for the necessary permits and related inspections. Additional or re-inspection fees shall be paid for by the Contractor. Permits and licenses necessary for the prosecution of the work shall be secured by the Contractor.

SP-18 NOTICE-OF-INTENT (NOI): If necessary, the Contractor for the project shall submit a Notice of Intent to Use Generic Permit for Stormwater Discharge from Large and Small Construction Activities, along with the permit fee with the Florida Department of Environmental Protection.

SP-19 SPECIFICATIONS AND PLANS: Information regarding this project may be viewed and downloaded from DemandStar's website at www.demandstar.com. Links to DemandStar are also available from the city website at www.northportfl.gov Bid documents are posted on the City FTP site at <https://northportfl.gov/filesshare>

SP-20 CONTRACTOR'S UNDERSTANDING: It is understood and agreed that the Contractor has, by careful examination, satisfied himself as to the nature and locations of the work, the conformation of the ground, the

character, quality, and quantity of materials to be encountered, the character of equipment and facilities needed prior to and during prosecution of the work under this Contract. No verbal agreement or conversation with any officer, agent, or employee of the City, either before or after execution of this Contract, shall affect or modify the terms or obligations herein contained.

SP-21 ERRORS OR OMISSIONS IN PERMITS, PLANS OR SPECIFICATIONS: The Bidder shall take no advantage of any apparent error or omission, which may be discovered in the Permits, Plans or Specifications but shall forthwith notify the City Representative of such discovery, who will then make such correction and interpretations as deemed necessary for reflecting the actual spirit and intent of the Permits and Specifications.

SP-22 ROAD/LANE CLOSURE: No road closures are allowed. A lane closure request must be submitted in writing five (5) business days in advance of the requested lane closure. The time and length of closure(s) shall be approved by the City of North Port. The Contractor shall provide a Maintenance of Traffic (MOT) Plan for the requested lane closure(s) for review and approval by the City of North Port.

SP-23 MAINTENANCE OF TRAFFIC: The contractor shall be responsible for all maintenance of traffic and obtaining approval of a Maintenance of Traffic (MOT) Plan from the City for work within the ROW of any City Road. The Contractor shall maintain traffic at all times during construction.

SP-24 DEWATERING: The Contractor shall request approval from the City of North Port Project Manager before applying for a permit from the Southwest Florida Water Management District.

SP-25 PRIVATE PROPERTY: The Contractor shall not occupy private land outside of any easements or rights of way unless a written authorization has been signed by the property owner. It shall be the Contractor's responsibility to obtain these agreements prior to construction, if required. Prior to the use of private lands, the Contractor shall submit a copy of the agreement(s) to the City. In the event that the Contractor uses private property for any purpose without first having obtained the necessary approvals from the property owner or provided the necessary agreement to the City, the City will direct the Contractor in writing to immediately cease using such property.

Prior to application for final payment, the Contractor shall provide documentation from the owner of each piece of private property for which an agreement for use was provided, or for which the City has issued written notification to the Contractor, that each owner is satisfied with the manner in which the Contractor has restored the property. Final payment or reduction in retainage shall not be paid until such documentation is received by the City.

Any areas, outside of the rights-of-way or easements that are impacted or damaged by the Contractor's activities shall be repaired at the Contractor's expense to the property owner's satisfaction. Restoration of impacted areas shall be equal to or better than original condition and to the satisfaction of the property owner. The Contractor shall be responsible to secure written approval of the restoration of the property from the property owner and submitting a copy to the City prior to requesting Substantial Completion. The City shall not release retainage to the Contractor until such time as the approvals are submitted by the Contractor.

SP-26 RESIDENTS CONCERNS: During the work of this Contract, residents may contact the City to question the progress of the work or express concerns regarding the work. These concerns are responded by City's Utilities Department, but normally the Contractor will have more detailed information on the actual scheduling of the work or corrective measures required. Therefore, the Contractor will provide a telephone number and email address where City's Utilities Department can fax or email inquiries. The Contractor shall respond to these inquiries within two (2) business days detailing how the inquiry will be addressed and the time frame the Contractor will take in addressing this inquiry. City's Utilities Department will maintain a log of inquiries, which will be reviewed at each progress meeting.

SP-27 TESTING: Any and all testing requirements born out of, but not limited to contract requirements and permits, for the installation of utility piping, including but not limited to, pressure testing, will be included in the Contractor's bid price. Testing shall include all utilities installed as part of the work of these Contract Documents. Testing will be arranged in advance with an independent testing firm (also included in the bid price) for the testing of concrete and compaction. The City requests to be notified three (3) business days in advance of any test in order to have a City representative and the Engineer of Record, if required, present. Where less time for notice is specified in the specifications or plans, this special provision shall prevail.

SP-28 MISCELLANEOUS ITEMS: Miscellaneous items and accessories which are not specifically mentioned, but which are essential to produce a complete and properly operating installation, or usable structure or plant, providing the indicated function, shall be furnished and installed without change in the Contract Price. Such miscellaneous items and accessories shall be of the same quality standards, including material, style, finish, strength, class, weight and other applicable characteristics, as specified for the major component of which the miscellaneous items or accessory is an essential part, and shall be approved by the City's Engineer of Record before installation. The above requirement is not intended to include major components not covered by or inferable from the Drawings and Specifications.

SP-29 SOURCES OF WATER FOR TESTING, CLEANING, AND OTHER CONSTRUCTION PURPOSES: Reclaimed water piping pressure and flow testing and flushing may be done with reclaimed water. All Contractors' connection(s) to the City reclaimed water supply shall allow the City to meter the amount of reclaimed water used in testing, flushing, and other miscellaneous purposes during construction, etc. The Contractor is responsible for obtaining meter(s) and associated appurtenances, and paying all appropriate fees/deposits. Contractor shall not use any water until meter is installed. The actual reclaimed water used will be provided at no cost to the Contractor by Utilities. Any fees/deposits due back to the Contractor will be returned after the project is completed and the meter is removed.

If potable water is required for the Work of this Contract, all Contractors' connection(s) to the City potable water supply shall allow the City to meter the amount of water used. All potable water connections shall include a reduced pressure zone backflow preventer. The Contractor is responsible for obtaining meter(s), backflow preventers, and associated appurtenances, and paying all appropriate fees/deposits. Contractor shall not use any potable water until meter and backflow preventer are installed. The Contractor will set up an account with the City and will be billed at the City's normal rates for actual potable water used. Any fees/deposits due back to the Contractor will be returned after the project is completed and the meter is removed.

SP-30 POTABLE WATER AND WASTEWATER FORCE MAIN OVER-DEPTH AND PLACEMENT: Potable water mains and wastewater force mains shall be installed with a minimum of thirty-six (36") inches of cover over the pipe. Any required over-depth, whether shown on the plans or not, will be considered to be incidental to the main installation and no additional compensation will be made therefore.

SP-31 PRE-INSTALLATION VIDEO: No construction shall take place prior to the City's acceptance of the Pre-Installation Video. The video shall thoroughly capture the intended work area as outlined in the Contract Documents. The Pre-Installation Video will be used to protect all parties involved in the project.

SP-32 PERIODIC CLEAN UP AND RESTORATION: During construction, the Contractor shall regularly remove from site and properly dispose of all accumulated debris and surplus material of any kind that result from their operations. The Contractor shall remove unsightly mounds of earth, large stones, boulders, and debris so the site presents a neat appearance. Burial of construction debris is not permitted. Unused tools and equipment shall be stored at the Contractor's yard or base of operations for the project. When the contract work involves ROWs, private property, roadways, private driveways or access roads, easements and sidewalks, and any site work that may impede pedestrian or vehicular traffic while the installation work is in progress, the Contractor shall backfill, grade, compact, and otherwise restore the area to the basic condition which existed prior to work in order to allow vehicular and pedestrian use. All

areas should be restored to their original design grade to facilitate drainage.

SP-33 CONNECTION TO EXISTING POTABLE WATER AND WASTEWATER FORCE MAIN(S): The connections to the existing potable water and wastewater force mains shall be paid at the contract bid price per each which shall include the cost of connection, satisfactory coordination of utility construction, labor, material, equipment and all other associated appurtenances required to complete the project in accordance with the Contract Documents. Tie-ins to existing main(s) shall be coordinated with City Utilities.

It shall be the express responsibility of the Contractor to connect his Work to each part of the existing work or of work previously installed as required by the Drawings and Specifications to provide a complete installation.

Connections/modifications to existing piping requires coordination with City Utilities staff. The Contractor shall not operate any existing valves.

SP-34 MAINTENANCE OF FLOW: It is the Contractor's responsibility to maintain the flow of the existing potable water, wastewater force mains, and lift stations during the construction. Maintenance of flow is considered incidental to the work and shall be done at no additional cost to the City.

SP-35 CITY RIGHT-OF-WAY RESTORATION: The ROW restoration includes all procedures to restore the ROW to a condition equal to or better than the original condition to the satisfaction of the City. The Contractor shall be responsible for restoration of items including but not limited to existing structures, stabilized roads, and ground areas damaged during construction.

During installation of new utilities, the Contractor shall maintain, an undisturbed existing buffer strip of ground cover measuring a minimum of one foot (1') in width from the edge-of- pavement (EOP) in order to minimize potential erosion along the pavement edge. The Contractor shall be responsible for all costs to restore this buffer strip if disturbed during construction.

SP-36 LABOR, MATERIALS AND EQUIPMENT: The Contractor will provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. He will at all times maintain good discipline and order at the site.

The Contractor will furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, local telephone, water and sanitary facilities and all other facilities and incidentals necessary for the execution, testing, initial operation and completion of the Work.

All materials and equipment will be new, except as otherwise provided in the Contract Documents. When special makes or grades of material which are normally packaged by the supplier or manufacturer are specified or approved, such materials shall be delivered to the site in their original packages or container with seals unbroken and labels intact.

All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator or processors, except as otherwise provided in the Contract Documents.

SP-37 MATERIALS, EQUIPMENT, PRODUCTS, AND SUBSTITUTIONS: Materials, equipment and products incorporated in the Work must be approved for use before being purchased by the Contractor. The Contractor shall submit to the City a list of proposed materials, equipment or products, together with such samples as may be necessary of him to

determine their acceptability and obtain his approval. No request for payment for "or equal" equipment will be approved until this list has been received and approved by the City.

Whenever a material, article or piece of equipment is identified on the Drawings or Specifications by reference to brand name or catalog number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered per 40 CFR 33.255(c) as referenced in Chapter 62-552, FAC. The Contractor may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the Contract Documents by reference to brand name or catalog number, and if, in the opinion of the City, such material, article, or piece of equipment is of equal substance and function to that specified, the City may approve its substitution and use by the Contractor. Incidental changes or extra component parts required to accommodate the substitute will be made by the Contractor without a change in the Contract Price or Contract Time.

No substitute shall be ordered or installed without the written approval of the City who shall be the judge of equality.

Delay caused by obtaining approvals for substitute materials will not be considered justifiable grounds for an extension of construction time.

Should any work or materials, equipment or products not conform with requirements of the Drawings and Specifications or become damaged during the progress of the Work, such Work or materials shall be removed and replaced, together with any work disarranged by such alteration, at any time before completion and acceptance of the Project. All such work shall be done at the expense of the Contractor.

No materials or supplies for the Work shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sale or other agreement by which an interest is retained by the Seller. The Contractor warrants that he has good title to all materials and supplies used by him in the Work.

SP-38 USE OF PREMISES: The Contractor shall confine his apparatus, storage of materials, and operations of his workmen to limits indicated by law, ordinances, permits, and directions of City, and shall not unnecessarily encumber any part of the site.

Contractor shall not overload or permit any part of any structure to be loaded with such weight as will endanger its safety, nor shall he subject any part of the Work to stresses or pressures that will endanger it.

Contractor shall enforce City's instructions in connection with signs, advertisements, fires and smoking.

Contractor shall arrange and cooperate with City in routing and parking of automobiles of his employees, Subcontractors and other personnel, and in routing material delivery truck and other vehicles to the Project site.

SP-39 SURVEY: All survey monuments and benchmarks that may be disturbed during construction shall be referenced and replaced by the Contractor. All monuments and benchmarks disturbed or destroyed by the Contractor or any of his forces through accident or negligence shall be replaced by a Florida Licensed Professional Land Surveyor at the Contractor's expense.

SP-40 MANUFACTURER'S LITERATURE: Manufacturer's literature, when referenced, shall be dated and numbered and is intended to establish the minimum requirements acceptable. Whenever reference is given to codes, or standard specifications or other data published by regulating agencies or accepted organizations, including but not limited to National Electrical Code, applicable State Building Code, Federal Specifications, ASTM Specifications, various institute specifications, and the like, it shall be understood that such reference is to the latest edition including addenda in

effect on the date of Bid.

SP-41 BRAND NAMES: Brand names where used in the technical specifications, are intended to denote the standard of quality and performance required of the particular material or product. The term “equal” or “equivalent”, when used in connection with brand names, shall be interpreted to mean a material or product that is similar and equal in type, quality, size, capacity, composition, finish, color and other applicable characteristics to the material or product specified by trade name, and that is suitable for the same use and capable of performing the same function, in the opinion of the City’s Engineer of Record, as the material or product so specified. The City’s Engineer of Record must approve proposed equal items before they are purchased or incorporated in the Work.

SP-42 RECORD DRAWINGS: The Contractor will keep one record copy of all Specifications, Drawings, Addenda, Modifications, and Shop Drawings at the site in good order and annotated to show all changes made during the construction process. Record Drawings shall list all equipment removed from existing facilities. These shall be available to the City, City’s Representative, City’s Engineer of Record, and to the State of Florida Department of Environmental Protection (FDEP), and shall be delivered by him to the City upon completion of the Project. It shall be used for this purpose only. Final payment will not be made until receipt and approval by the City of Record Drawings.

SP-43 RECORD DRAWINGS CERTIFICATION: The certification statement shall be as follows:

"I hereby certify that the as-built location information of the water and wastewater facilities shown on these drawings conforms to the Minimum Technical Standards for Land Surveying in the State of Florida, chapter 5J-17.052 (Florida Administrative Code), as adopted by the Department of Agriculture and Consumer Services, Division of Consumer Services, Board of Professional Surveyors and Mappers in 2010, and that said as-builts are true and correct to the best of my knowledge and belief as surveyed under my direction."

SP-44 COMPLETION OF THE PROJECT: The Completion of the project shall be accomplished and finalized prior to submittal of the application for final payment by the Contractor. The City shall determine the date of completion for the project when at the minimum, the following are met as well as all other conditions defined in the Contract Documents:

- All punch list items have been addressed to the satisfaction of the City;
- All testing has been completed and results are satisfactory (including but not limited to Pipe Pressure Test, Concrete, and Compaction Tests);
- Record Drawing requirements have been accepted and approved by the City and all other governmental agencies, if applicable;
- All associated equipment and facilities necessary for the reliable operation of the project are complete in accordance with contract requirements; and,
- All release of liens have been submitted and are satisfactory to the City, certifying that all payrolls, material bills, and other indebtedness incurred by the Contractor in connection with this project have been paid in full.

SP-45 STORED MATERIALS: Payment for stored materials will made in accordance with Section 3.2 of the General Provisions.

SP-46 PAYMENT ADJUSTMENT: The following will apply: This Contract will *not* provide for fuel or other payment adjustments due to increase in material costs during the life of the contract.

SP-47 TERMINOLOGY: Throughout the Contract Documents, references to City or Owner shall, where appropriate, refer to the City of North Port, a municipal corporation of the State of Florida. References to Utilities Department and North Port Utilities refer to the City of North Port’s Utilities Department and are used interchangeably. References to

Engineer or “Resident Project Representative” may, where appropriate, refer to either the City’s Engineer of Record for the Project, which is Stantec, or to the City’s Utilities Engineering Manager.

The terms General Conditions and General Provisions are used interchangeably in the Contract Documents. The terms Special Conditions and Special Provisions are used interchangeably in the Contract Documents.

The term “Contract Documents” is used interchangeably with “Agreement.”

SP-48 WORK HOURS: The Contractor shall conduct work between 7 A.M. and 3:30 P.M. Monday through Friday, which is defined as regular work hours. The Contractor shall not conduct work on Saturdays, Sundays, legal holidays or holidays observed by the City. Work conducted outside of the regular work hours and days shall be permitted only with written permission from the City. Any additional cost incurred by North Port Utilities and/or the Engineer of Record for work outside these hours will be paid by the Contractor.

SP-49 NOTIFICATIONS OF 48 HOURS: Wherever the technical specifications or plans indicate a minimum of 48 hours’ notice to Owner/City or Engineer, this special provision shall prevail dictating a minimum of three (3) business days’ notice to Owner/City or Engineer.

SP-50 QUALIFICATIONS/REFERENCES: Contractor shall submit a minimum of three (3) recent (**within the past five (5) years**) references of projects of similar size and scope.

- Each reference shall include a project description, project location, name and phone number of a contact person, total project amount, and completion date.

The Contractor/Subcontractor qualification requirements include the following criteria:

- Successful completion of building projects including all earth and underground work required for a complete project.

The City reserves the right to contact references. Bidder is referred to MINIMUM QUALIFICATIONS AND REFERENCE FORM included later herein. Please provide accurate telephone and e-mail address for contact person.

SP-51 LICENSE(S) REQUIREMENT: Certified General Contractor.

SP-52 CITY’S STATUS: The City shall examine and inspect the work to assure compliance with the requirements of these Contract Documents. The City shall determine the quality and acceptability of materials and workmanship relative to the requirements of the Plans and Technical Specifications. The City has the authority as follows:

1. To stop the work whenever such stoppage may be necessary to insure the proper execution of the Contract.
2. To reject all work which does not conform to the Contract.
3. To resolve questions which arise in the execution of the work.
4. To stop work whenever materials or shop drawings have not been approved prior to placement.

No additional time or compensation will be added to the Contract when stopping the work for the above listed reasons.

SP-53 CRITERIA FOR AWARD: The award of this bid shall be to the overall lowest responsive, responsible bidder in whole or in part whichever is determined to be in the best interest of the City, meeting the requirements of the specifications and provisions set forth herein. Other consideration(s) of award shall be references, and local preference. Any unfavorable references may be cause to deem bidder non-responsive.

The City reserves the right to reject the bid proposal of any bidder who has previously failed to perform properly, or on time, contracts of similar nature; or who is not in a position to satisfactorily perform the contract.

END OF SECTION III

ATTACHMENT 2:

BID SCHEDULE IN EXCEL FORMAT

SEPARATE ATTACHMENT

- DO NOT RECREATE
- SUBMIT AN (1) ORIGINAL AND (1) HARD COPY
- DO NOT PDF EXCEL SPREADSHEET SAVE IN EXCEL FORMAT ON USB DRIVE

It is understood that the estimated summary of pay item quantities are approximate only and are solely for the purpose of facilitating the comparison of bids, and that the Contractor's compensation shall be computed upon the basis of the actual quantities in the completed work, whether they be more or less than those shown.

Preparation of Bid Schedules: Contractor **MUST** use the City provided excel spreadsheet. DO NOT RECREATE FORM. All GREEN spaces in the Bid Form to be filled. *Bidder should not reference the words "No Charge, N/A, included, dash, etc." in any of the spaces. Bidder must identify a monetary amount for each UNIT COST (unless the unit price is "x" out by the City). UNIT COST prevails over EXTENDED COST. Failure to identify a monetary amount in any of the UNIT COST line items shall cause Bidder to be deemed non-responsive and bid response be rejected.* In case of discrepancy between unit price and extended price, the unit price will govern. Apparent errors in extension will be corrected.

ATTACHMENT 1: INSURANCE REQUIREMENTS

Contractor and subcontractors shall procure and maintain until all of their obligations have been discharged, including any warranty periods under this Contract are satisfied, insurance against claims for injury to persons or damage to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or subcontractors.

The insurance requirements herein are minimum requirements for this Contract and in no way limit the indemnity covenants contained in this Contract. The City in no way warrants that the minimum limits contained herein are sufficient to protect the Contractor from liabilities that might arise out of the performance of the work under this Contract by the Contractor, his agents, representatives, employees, or subcontractors. Contractor is free to purchase such additional insurance as may be determined necessary.

LIMITS OF INSURANCE - Contractor shall provide coverage with limits of liability not less than those stated below. An excess liability policy or umbrella liability policy may be used to meet the minimum liability requirements provided that the coverage is written on a "following form" basis.

Requirements:

1. Commercial General Liability – Occurrence Form (CG 00 01)

Policy shall include bodily injury, property damage, broad form contractual liability and Explosion, Collapse and Underground (XCU) coverage. The general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.

The Contractor shall procure and maintain, and require all subcontractors to procure and maintain a comprehensive general liability policy, including, but not limited to

- General Aggregate \$6,000,000
- Each Occurrence \$3,000,000
- products and completed ops \$6,000,000
- damage to rented premises \$100,000
- fire damage \$100,000

- a) The policy shall be endorsed to include the following additional insured language: "City of North Port and its officers, employees, agents and volunteers" shall be named as an additional insured with respect to liability arising out of the activities performed by, or on behalf of the Contractor.
- b) Contractor's subcontractors shall be subject to the same minimum requirements identified above.
- c) Policy shall be endorsed for a waiver of subrogation against the City of North Port.

2. Commercial Automobile Liability

Bodily injury and property damage for any owned, hired, and non-owned vehicles used in the performance of this Contract. Automobile liability must be written on a standard ISO form (CA 00 01) covering any auto (Code 1), or if Contractor has no owned autos, hired (Code 8) and non-owned (Code 9) autos.

- Combined Single Limit (CSL) (Each Accident) \$1,000,000
- Bodily Injury (per person) \$1,000,000
- Bodily Injury (per accident) \$1,000,000

- Property Damage (per accident) \$1,000,000
- The policy shall be endorsed to include the following additional insured language: "City of North Port and its officers, employees, agents and volunteers" shall be named as an additional insured with respect to liability arising out of the activities performed by, or on behalf of the Contractor, including automobiles owned, leased, hired or borrowed by the Contractor".
- Contractor's sub-contractors shall be subject to the same minimum requirements identified in this section.
- Policy shall contain a waiver of subrogation against the City of North Port.

4. **Worker's Compensation and Employers' Liability (PER CHAPTER 440. FLORIDA STATUTES)**

The Contractor shall procure and maintain Worker's Compensation insurance for all his employees to be engaged in work on the project under this Contract and, in case any such work is sublet, the Contractor shall require the subcontractor similarly to provide Worker's Compensation insurance for all of the latter's employees to be engaged in such work unless such employees are covered by protection afforded by the Contractor's Workers Compensation insurance. For additional information contact the Department of financial Services, Workers' Compensation Division at 850.413.1601 or on the web at www.fldfs.com. In case any class of employees engaged in hazardous work on the project under this Contract is not protected under the Worker's Compensation Statute, the Contractor shall provide, and shall cause each subcontractor to provide, Employer's Liability Insurance for the protection of such of his employees not otherwise protected under such provisions. The minimum liability limits of such insurance shall not be less than herein specified or in that amount specified by law for that type of damage claim.

Proof of such insurance shall be filed by the Contractor with the City within ten (10) days after the execution of this Contract.

Workers' Compensation Employers' Liability

- a. Coverage pursuant to Florida Statutes, Chapter 440 must apply to all employees at the statutory limits provided by state and federal laws. The policy must include Employers' Liability with a limit of \$1,000,000 for each accident; \$1,000,000 for each employee; and \$1,000,000 policy limit for bodily injury or disease. Policy shall contain a waiver of subrogation against the City of North Port.
- b. Contractor's sub-contractors shall be subject to the same minimum requirements identified in this section.
- c. If the contractor has no employees, the contractor must submit to the City the Workers Compensation Exemption from the State of Florida.

5. **Builder's Risk Insurance for the Course of Construction or Installation Floater Insurance.** The policy must include the "All Risk" (Special Perils) coverage with limits equal to the completed value of the project; and must not include coinsurance penalty provisions.

GENERAL REQUIREMENTS:

A. The City of North Port is to be named additional insured on **Comprehensive Commercial General Liability Policy and Auto Policy**. All certificates of insurance must be on file with and approved by the City before commencement of any work activities under this Contract.

Any and all deductibles to the above referenced policies are to be the responsibility of the Contractor. The Contractor's insurance is considered primary for any loss regardless of any insurance maintained by the City. The Contractor is responsible for all insurance policy premiums, deductibles, or SIR (self-insured retentions) or any loss or portion of any loss that is not covered by any available insurance policy.

All insurance policies must be issued by companies of recognized responsibility licensed to do business in Florida and must contain a provision that prohibits cancellation unless the City is provided notice as stated within the policy. It is the Contractor's responsibility to provide notice to the City.

B. WAIVER OF SUBROGATION: All required insurance policies, with the exception of Workers Compensation, are to be endorsed with a waiver of subrogation. The insurance companies, by proper endorsement or thru other means, agrees to waive all rights of subrogation against the City, its officers, officials, employees and volunteers, and the City's insurance carriers, for losses paid under the terms of these policies that arises from the contractual relationship or work performed by the Contractor for the City. It is the Contractor's responsibility to notify their insurance company of the Waiver of Subrogation and request written authorization or the proper endorsement. Additionally, the Contractor, its officers, officials, agents, employees, volunteers, and any Subcontractors, agrees to waive all rights of subrogation against the City and its insurance carriers for any losses paid, sustained or incurred, but not covered by insurance, that arise from the contractual relationship or work performed. This waiver also applies to any deductibles or self-insured retentions the Contractor or its agents may be responsible for.

C. POLICY FORM:

1. All policies, required by this Contract, **with the exception of Workers Compensation**, or unless specific approval is given by Risk Management through the City's Purchasing Office, are to be **written on an occurrence basis**, shall name the City of North Port, its Commissioners, officers, agents, employees and volunteers as additional insured as their interest may appear under this Contract. Insurer(s), with the exception of Professional Liability and Workers Compensation, shall agree to waive all rights of subrogation against the City of North Port, its Commissioners, officers, agents, employees, or volunteers.
2. Insurance requirements itemized in this Contract, and required of the Contractor, shall be provided by or on behalf of all subcontractors to cover their operations performed under this Contract. The Contractor shall be held responsible for any modifications, deviations, or omissions in these insurance requirements as they apply to subcontractors.
3. Each insurance policy required by this Contract shall:
 - a. Apply separately to each insured against whom claim is made and suit is brought, except with respect to limits of the insurer's liability.
 - b. Be endorsed to state that coverage shall not be suspended, voided or cancelled by either party except after notice is delivered in accordance with the policy provisions. The Contractor is to notify the City Purchasing Office by written notice via certified mail, return receipt requested.
4. The City shall retain the right to review, at any time, coverage, form, and amount of insurance.
5. The procuring of required policies of insurance shall not be construed to limit Contractor's liability nor to fulfill the indemnification provisions and requirements of this Contract. The extent of Contractor's liability for indemnity of the City shall not be limited by insurance coverage or lack thereof, or unreasonably delayed for any reason, including but not limited to, insurance coverage disputes between the Contractor and its carrier.
6. The Contractor shall be solely responsible for payment of all premiums for insurance contributing to the satisfaction of this Contract and shall be solely responsible for the payment of all deductibles and retentions to which such policies are subject, whether or not the City is an insured under the policy.
7. Claims Made Policies will be accepted for professional and hazardous materials and such other risks as are authorized by the City's Risk Office. All Claims Made Policies contributing to the satisfaction of the insurance requirements herein shall have an extended reporting period option or automatic coverage of not less than two (2) years. If provided as an option, the Contractor agrees to purchase the extended reporting period on cancellation or termination unless a new policy is affected with a retroactive date, including at least the last

policy year.

- 8. Certificates of Insurance Evidencing Claims Made or Occurrences form coverage and conditions to this Contract, as well as the contract number and description of work, are to be furnished to the City’s Purchasing Office (4970 City Hall Boulevard, Suite 337, North Port, FL 34286) prior to commencement of work AND a minimum of thirty (30) calendar days prior to expiration of the insurance contract when applicable. All insurance certificates shall be received by the City’s Purchasing Office before the Contractor will be allowed to commence or continue work. The Certificate of Insurance issued by the underwriting department of the insurance carrier shall certify compliance with the insurance requirements provided herein.

Bidders should carefully review their existing insurances and consider their ability to meet these requirements prior to submission. The requirements should be forwarded to their agent, broker, and insurance providers for review

Unless otherwise specified, it shall be the responsibility of the contractor to ensure that all subcontractors comply with the same insurance requirements spelled out above.

All certificates of insurance must be on file with and approved by the City of North Port Risk Division before the commencement of any work activities.

Bidder Statement:

We understand the requirements requested and agree to fully comply.

BIDDER’S NAME TITLE_____ TITLE_____

AUTHORIZED SIGNATURE DATE_____ DATE_____

THIS PAGE MUST BE COMPLETED AND SUBMITTED

**ATTACHMENT 3:
BID FORM**

Name of Bidder: _____

Business Address: _____

Telephone Number: _____ Fax Number: _____

E-mail Address: _____

Contractor License #: _____

FEID #: _____

To the City Commission of the City of North Port pursuant to and in compliance with your notice inviting sealed bids (Invitation to Bid), Instructions to Bidders, and the other documents relating thereto, the undersigned bidder, having familiarized himself/herself with the terms of the Contract documents, local conditions affecting the performance of the Contract, and the cost of the work at the place where the work is to be done, hereby proposes and agrees to perform within the time stipulated in the Contract, including all of its component parts and everything required to be performed, and to provide and furnish any and all of the labor, material, tools, expendable equipment, and all utility and transportation services and design of certain items necessary to perform the Contract and complete in a workmanlike manner, all of the work required in connection with the construction of said work all in strict conformity with the plans and specifications and other Contract documents for the prices hereinafter set forth.

The undersigned, as bidder, does hereby declare that he has read the Request for Bids, Instructions to Bidders, General Provisions, Special Provisions, Technical Specifications & Conditions, Insurance Requirements, Bid Form, Permit Fees, Plan Revisions, Plans, grants, geotechnical reports and any other documentation for: **RFB No. 2024-15 North Port Utilities Administration Building** and further agrees to furnish all items listed on the attached Bid Form in accordance with the Lump Sum line items as indicated on the bid schedule form submitted. The above specified documents are herein incorporated into the Bid Form.

The undersigned as bidder, declares that the only persons or parties interested in this submittal as principals are those named herein; that this submittal is made without collusion with any person, firm, or corporation; and he/she proposes and agrees, if the proposal is accepted, that he/she will execute a Contract with the City in the form set forth in the Contract documents and that he/she will accept in full payment thereof the following prices, to wit:

TOTAL BID PRICE:

_____ \$ _____
(TYPE/PRINT) **(NUMERIC)**

Through the signing of this Bid Form, Bidder attests his/her bid is guaranteed for a period of not less than **NINETY (90) DAYS** from the date of the official bid opening.

Date: _____

Signed (Person authorized to bind the company): _____

Name (printed): _____ Title: _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED

**ATTACHMENT 4:
STATEMENT OF ORGANIZATION**

The following information will be provided to the City of North Port for incorporation in legal documents. It is, therefore, vital all information is accurate and complete. Please be certain all spelling, and capitalization is exactly as registered with the state or federal government.

Company Name _____

Telephone #	E-Mail	Fax #
--------------------	---------------	--------------

Main Office Address _____

City	State	Zip Code
<i>Address of Office Servicing City of North Port, if different than above:</i> <input type="checkbox"/> SAME AS ABOVE		

Office Address _____

City	State	Zip Code
-------------	--------------	-----------------

Telephone #	E-mail	Fax #
--------------------	---------------	--------------

Name & Title of Firm Representative _____

Federal Identification Number: _____

Bidder shall submit proof that it is authorized to do business in the State of Florida unless registration is not required by law.

(Please

Check One)

Is this a Florida Corporation: Yes or No

If not a Florida Corporation,

In what state was it created: _____

Name as spelled in that State: _____

What kind of corporation is it: "For Profit" or "Not for Profit"

Is it in good standing: Yes or No

Authorized to transact business in Florida: Yes or No

State of Florida Department of State Certificate of Authority Document No.: _____

Does it use a registered fictitious name: Yes or No

Names of Officers:

President: _____ **Secretary:** _____

Vice President: _____ **Treasurer:** _____

Director: _____ **Director:** _____

Other: _____ **Other:** _____

Name of Corporation (As used in Florida):

(Spelled exactly as it is registered with the state or federal government)

Corporate Address:

Post Office Box: _____
City, State Zip: _____
Street Address: _____
City, State, Zip: _____

Date: _____

Signed (Person authorized to bind the company): _____

Name (printed): _____ **Title:** _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED

**ATTACHMENT 5:
ADDENDA AND BOND INFORMATION**

The undersigned acknowledges receipt of the following addenda, and the cost, if any, of such revisions has been included in the bid price.

Addendum No.		Dated		Addendum No.		Dated	
Addendum No.		Dated		Addendum No.		Dated	
Addendum No.		Dated		Addendum No.		Dated	
Addendum No.		Dated		Addendum No.		Dated	

BID BOND AND PERFORMANCE/PAYMENT BOND (SEE ATTACHMENTS 18 & 19)

BID BOND: ACCOMPANYING THIS PROPOSAL IS _____

(insert: “cash”, “Bidder’s bond”, or “certified check”, as the case may be) in an amount equal to at least 5% of the total amount of the bid, payable to the City of North Port. Cashier’s checks will be returned to all Bidders after award of bid. If supplying a bid bond please use the attached bid bond form. **Note: Failure to submit a bid bond will be cause for rejection of bid.**

The undersigned deposits the above-named security as a proposal guarantee and agrees that it shall be forfeited to the City as liquidated damages in case this proposal is accepted by the City and the undersigned fails to execute a Contract with the City as specified in the Contract documents accompanied by the required labor and material and faithful performance bonds with sureties satisfactory to the City, and accompanied by the required certificates of insurance coverage. Should the City be required to engage the services of an attorney in connection with the enforcement of this bid, Bidder promises to pay City’s reasonable attorneys’ fees incurred with or without suit.

The undersigned agrees, if awarded this bid, to furnish a **PERFORMANCE AND PAYMENT BOND** in the amount of 100% of the total project price within ten (10) calendar days after notification of award to the Purchasing Department. The undersigned shall be responsible and bear all costs associated to record Performance and Payment Bond with Sarasota County Clerk’s Office. Receipt of said recording and a certified copy of the Bond shall be furnished to the Purchasing Division at the time of the pre-construction meeting.

All Contract documents (i.e.: performance and payment bond, cashier’s check, bid bond) shall be in the name of “City of North Port”.

Date: _____

Signed (Person authorized to bind the company): _____

Name (printed): _____ **Title:** _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED

**ATTACHMENT 6:
EQUIPMENT AND SUBCONTRACTOR/SUPPLIER LIST**

Equipment is located at: _____

Please make sure your list of equipment contains the following: Description of equipment, inclusive of manufacturer, year and condition.

List the condition of equipment/vehicles utilized for this project in accordance with the following scale:
1-Excellent: 2-Good: 3-Fair: 4-Poor. (Attach additional sheets, if required.)

Description	Manufacturer	Year	Condition	Leased/Owned
1. _____				
2. _____				
3. _____				

SOURCE OF SUPPLY AND SUBCONTRACTOR FORM

The following sources of supply and subcontractors shall be used for the **RFB NO. 2024-15 NORTH PORT UTILITIES ADMINISTRATION BUILDING**. If Bidder does not have a source of supply or subcontractor, insert "to be determined". When a source or subcontractor is determined, selection will be subject to City approval. (If not applicable, state N/A).

SUBCONTRACTOR(S)
(PLEASE INCLUDE ADDRESS/TELEPHONE NUMBER & E-MAIL)

1. _____
2. _____
3. _____

SUPPLIER(S)

1. _____
2. _____
3. _____

Date: _____

Signed (Person authorized to bind the company): _____

Name (printed): _____ Title: _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED

ATTACHMENT 7:

QUALIFICATIONS AND REFERENCES

QUALIFICATIONS/REFERENCES: Contractor shall submit a minimum of three (3) recent (**within the past five (5) years**) references of projects of similar size and scope.

- Each reference shall include a project description, project location, name and phone number of a contact person, total project amount, and completion date.

The Contractor/Subcontractor qualification requirements include the following criteria:

- Successful completion of building projects including all earth and underground work required for a complete project.

1. Business/Customer Name: _____

Name of Contact Person/Title: _____

Telephone# _____ Fax _____ E-mail _____

Address _____

Phone Number _____

Duration of Contract or business relationship _____

Type of Services Provided _____

Contract Period: FROM _____ TO _____

Contract Price \$ _____ Contract Price at Completion of the Project \$ _____

2. Business/Customer Name: _____

Name of Contact Person/Title: _____

Telephone# _____ Fax _____ E-mail _____

Address _____

Phone Number _____

Duration of Contract or business relationship _____

Type of Services Provided _____

Contract Period: FROM _____ TO _____

Contract Price \$ _____ Contract Price at Completion of the Project \$ _____

Date: _____

Signed (*Person authorized to bind the company*): _____

Name (printed): _____ Title: _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED

3. Business/Customer Name: _____

Name of Contact Person/Title: _____

Telephone# _____ Fax _____ E-mail _____

Address _____

Contract Period: FROM _____ TO _____

Contract Price \$ _____ Contract Price at Completion of the Project \$ _____

Phone Number _____

Duration of Contract or business relationship _____

Type of Services Provided _____

Contract Period: FROM _____ TO _____

Contract Price \$ _____ Contract Price at Completion of the Project \$ _____

4. Business/Customer Name: _____

Name of Contact Person/Title: _____

Telephone# _____ Fax _____ E-mail _____

Address _____

Phone Number _____

Duration of Contract or business relationship _____

Type of Services Provided _____

Contract Period: FROM _____ TO _____

Contract Price \$ _____ Contract Price at Completion of the Project \$ _____

Date: _____

Signed (Person authorized to bind the company): _____

Name (printed): _____ Title: _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED

**ATTACHMENT 8:
NON-COLLUSIVE AFFIDAVIT**

State of _____

County of _____

Before me, the undersigned authority, personally appeared:

_____ who, being first duly sworn, deposes and says that:

1. He/She is the _____ (Owner, Partner, Officer, Representative or Agent) of _____, the Respondent that has submitted the attached reply:
2. He/She is fully informed respecting the preparation and contents of the attached reply and of all pertinent circumstances respecting such reply:
3. Such reply is genuine and is not a collusive or sham reply:
4. Neither the said Respondent nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, have in any way colluded, conspired, connived or agreed, directly or indirectly, with any other respondent, firm, or person to submit a collusive or sham reply in connection with the work for which the attached reply has been submitted: or have in any manner, directly or indirectly sought by agreement or collusion, or communication or conference with any respondent, firm, or person to fix the price or prices in the attached reply or of any other respondent, or to fix any overhead, profit, or cost elements of the reply price or the reply price of any other respondent, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against (Recipient), or any person interested in the reply work.

Signed, sealed and delivered this _____ day of _____, 20____.

By: _____
(Printed Name)

(Title)

STATE OF FLORIDA

COUNTY OF _____

Sworn to (or affirmed) and subscribed before me by means of ___ physical presence or ___ online notarization, this ___ day of _____ 2024, by _____.

Notary Public – State of Florida

Personally Known _____ OR Produced Identification _____

Type of Identification Produced _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED

**ATTACHMENT 9:
CONFLICT OF INTEREST FORM**

F.S. §112.313 places limitations on public officers (including advisory board members) and employees' ability to Contract with the City either directly or indirectly. Therefore, please indicate if the following applies:

PART I.

I am an employee, public officer or advisory board member of the City

_____**(List Position Or Board)**

I am the spouse or child of an employee, public officer or advisory board member of the City

Name: _____

An employee, public officer or advisory board member of the City, or their spouse or child, is an officer, partner, director, or proprietor of Respondent or has a material interest in Respondent. "Material interest" means direct or indirect ownership of more than 5 percent of the total assets or capital stock of any business entity. For the purposes of [§112.313], indirect ownership does not include ownership by a spouse or minor child.

Name: _____

Respondent employs or Contracts with an employee, public officer or advisory board member of the City.

Name: _____

None of The Above

PART II: Are you going to request an advisory board member waiver?

I will request an advisory board member waiver under §112.313(12)

I will NOT request an advisory board member waiver under §112.313(12)

N/A

The City shall review any relationships which may be prohibited under the Florida Ethics Code and will disqualify any Bidders whose conflicts are not waived or exempt.

Date: _____

Signed (Person authorized to bind the company): _____

Name (printed): _____ **Title:** _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED

**ATTACHMENT 10:
PUBLIC ENTITY CRIME INFORMATION**

As provided by F.S. §287.133, a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a Contract to provide any goods or services to a public entity, may not submit a bid on a Contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a Contractor, supplier, Subcontractor, or Consultant under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

I, _____, being an authorized representative of the Respondent _____,

Located at: _____

City: _____ State: _____ Zip Code: _____, have read and understand the contents above. I further certify that Respondent is not disqualified from replying to this solicitation because of F.S. §287.133.

Signature: _____ Date: _____

Telephone #: _____ Fax #: _____

Federal ID #: _____ E-mail: _____

State of _____

County of _____

STATE OF FLORIDA

COUNTY OF _____

Sworn to (or affirmed) and subscribed before me by means of ____ physical presence or ____ online notarization, this ____ day of _____ 2024, by _____.

Notary Public – State of Florida

Personally Known _____ OR Produced Identification _____

Type of Identification Produced _____

Date: _____

Signed (Person authorized to bind the company): _____

Name (printed): _____ Title: _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED

**ATTACHMENT 11:
DRUG-FREE WORKPLACE FORM**

The undersigned Respondent in accordance with Florida Statute §287.087 hereby certifies that: _____ (Company Name) does:

- 1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
- 2. Inform employees about the dangers of drug abuse in the workplace, the business’s policy of maintaining a drug free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
- 3. Give each employee engaged in providing the commodities or Contractual services that are under bid a copy of the statement specified in subsection (1).
- 4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or Contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
- 5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee’s community, by any employee who is so convicted.
- 6. Make a good faith effort to continue to maintain a drug free workplace through implementation of this section.
As the person authorized to sign the statement, I certify that Respondent complies fully with the above requirements.

Check one:

- _____ As the person authorized to sign this statement, I certify that this firm complies fully with above requirements.
- _____ As the person authorized to sign this statement, this firm **does not** comply fully with the above requirements.

Signature

Print Name

Date

THIS PAGE MUST BE COMPLETED AND SUBMITTED

**ATTACHMENT 12:
AFFIDAVIT**

Claiming Status as a LOCAL BUSINESS

****CONTRACTOR MUST MEET ALL 4 REQUIREMENTS BELOW TO CLAIM LOCAL BUSINESS STATUS****

State of _____

County of _____

Before me, the undersigned authority, personally appeared: _____

who, being first duly sworn, deposes and says that:

1. I am the _____ (Owner, Partner, Officer, Representative or Agent) of _____, the Bidder that has submitted the attached proposal:

AND

2. I am fully informed respecting the operation and employees of the Bidder:

AND

3. I affirm that the Bidder has maintained a physical business address located within the limits of Sarasota County, Charlotte County or Desoto County for a period of six (6) months or more before submitting this bid, from which the Bidder operates or performs business. The qualifying local address is:

AND

4. I affirm that at least fifty percent (50%) of the Bidder’s employees are residents of the City of North Port. If requested by the City, the Bidder will be required to provide documentation substantiating the information given in this affidavit. City of North Port reserves the right to request supporting documentation as evidence to substantiate the information given in this affidavit. Failure to do so will result in the Bidder’s submission being deemed non-responsive.

Any Bidder that misrepresents its status as a local business or North Port local business shall be barred from receiving any City Contracts for a period of three (3) years.

STATE OF FLORIDA
COUNTY OF _____

Sworn to (or affirmed) and subscribed before me by means of _____ physical presence or _____ online notarization, this _____ day of _____ 2024, by _____.

Notary Public – State of Florida

Personally Known _____ OR Produced Identification _____
Type of Identification Produced _____

This page to be returned ONLY if Contractor is claiming a Local Business Status.

AFFIDAVIT

Claiming Status as a North Port Local Business

****CONTRACTOR MUST MEET ALL 4 REQUIREMENTS BELOW TO CLAIM NORTH PORT BUSINESS STATUS****

State of _____

County of _____

Before me, the undersigned authority, personally appeared: _____
who, being first duly sworn, deposes and says that:

1. I am the _____ (Owner, Partner, Officer, Representative or Agent) of _____, the Bidder that has submitted the attached bid:

AND

2. I am fully informed respecting the operation and employees of the Bidder:

AND

3. I affirm that the Bidder has maintained its primary physical business address within the limits of the City of North Port for a period of six (6) months or more before submitting this bid, from which the Bidder operates or performs business. The qualifying local address is

AND

4. I affirm that at least fifty percent (50%) of the Bidder’s employees are residents of the City of North Port.

If requested by the City, the Bidder will be required to provide documentation substantiating the information given in this affidavit. City of North Port reserves the right to request supporting documentation as evidence to substantiate the information given in this affidavit. Failure to do so will result in the Bidder’s submission being deemed non-responsive.

Any Bidder that misrepresents its status as a local business or North Port local business shall be barred from receiving any City Contracts for a period of three (3) years.

STATE OF FLORIDA
COUNTY OF _____

Sworn to (or affirmed) and subscribed before me by means of ___ physical presence or ___ online notarization, this ___ day of _____ 2024, by _____.

Notary Public – State of Florida

Personally Known _____ OR Produced Identification _____
Type of Identification Produced _____

This page to be returned ONLY if Contractor is claiming a North Port Local Business Status.

ATTACHMENT 13:
SWORN STATEMENT: THE FLORIDA TRENCH SAFETY ACT
(If applicable)

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC BY AN OFFICER AUTHORIZED TO ADMINISTER OATHS.

1. This Sworn Statement is submitted with Bid No. 2023-33 for the construction of Traffic Signals at Price Boulevard and Entrances to North Port High School and Heron Creek Middle School.
2. This Sworn Statement is submitted by _____ whose business address is _____ and (if applicable) its Federal Employer Identification Number (FEIN) is _____.
3. My name is _____ (PRINTED OR TYPED NAME OF INDIVIDUAL SIGNING) and hold the position of _____ with the above entity.
4. The Trench Safety Standards that will be in effect during the construction of this Project are Florida Statute Section 553.60-55.64, Trench Safety Act, and OSHA Standard.
5. The undersigned assures that the entity will comply with the applicable Trench Safety Standards and agrees to indemnify and hold harmless the County and ENGINEER, and any of their agents or employees from any claims arising from the failure to comply with said standard.
6. The undersigned has appropriated \$ _____ per linear foot of trench to be excavated over 5' deep for compliance with the applicable standards and intends to comply by instituting the following procedures: _____
7. The undersigned has appropriated \$ _____ per square foot for compliance with shoring safety requirements and intends to comply by instituting the following procedures: _____
8. The undersigned, in submitting this Bid, represents that he or she has reviewed and considered all available geotechnical information and made such other investigations and tests as he or she may deem necessary to adequately design the trench safety system(s) he or she will utilize on this Project.

Authorized Signature/Title

Sworn to and subscribed before me
this _____
(date)

Notary Public Signature

(Notary Seal)

My Commission Expires: _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED

**ATTACHMENT 14:
Scrutinized Company Certification Form**

Company Name: _____

Authorized Representative Name and Title: _____

Address: _____ City: _____ State: _____ ZIP: _____

Phone Number: _____ Email Address: _____

A company is ineligible to, and may not, bid on, submit a proposal for, or enter into or renew a Contract with the City of North Port for goods or services of any amount if, at the time of bidding on, submitting a proposal for, or entering into or renewing such Contract, the company is on the Scrutinized Companies that Boycott Israel List, created pursuant to Florida Statutes, section 215.4725, or is engaged in a boycott of Israel.

A company is ineligible to, and may not, bid on, submit a proposal for, or enter into or renew a Contract with the City of North Port for goods or services of \$1 million or more if, at the time of bidding on, submitting a proposal for, or entering into or renewing such Contract, the company is on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, created pursuant to Florida Statutes, section 215.473, or with companies engaged in business operations in Cuba or Syria.

CHOOSE ONE OF THE FOLLOWING

____ This bid, proposal, Contract or Contract renewal is for goods or services of less than \$1 million. As the person authorized to sign on behalf of the above-named company, and as required by Florida Statutes, section 287.135(5), I hereby certify that the above-named company is not participating in a boycott of Israel.

____ This bid, proposal, Contract or Contract renewal is for goods or services of \$1 million or more. As the person authorized to sign on behalf of the above-named company, and as required by Florida Statutes, section 287.135(5), I hereby certify that the above-named company is not participating in a boycott of Israel, is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, and it does not have business operations in Cuba or Syria.

I understand that pursuant to Florida Statutes, section 287.135, the submission of a false certification may result in the termination of the Contract if one is entered into, and may subject the above-named company to civil penalties, attorney's fees and costs.

Certified By: _____
AUTHORIZED REPRESENTATIVE SIGNATURE

Print Name and Title: _____

Date Certified: _____

Solicitation/Contract/PO Number (Completed by Purchasing): _____
THIS PAGE MUST BE COMPLETED AND SUBMITTED)

**ATTACHMENT 15:
LOBBYING CERTIFICATION**

“The undersigned hereby certifies, to the best of his or her knowledge and belief, that”:

STATE OF _____

COUNTY OF _____

This _____ day _____ of 2024 _____, being first duly sworn, deposes and says that he or she is the authorized representative of _____ (Name of the Contractor, firm or individual), and that the vendor and any of its agents agree to have no contact or communication with, or discuss any matter related in any way to any active City of North Port solicitation, with any City of North Port elected officials, officers, their appointees or their agents or any other staff or outside individuals working with the City in respect to this request other than the designated Procurement Official Contact and to abide by the restrictions outlined in the General Terms and Conditions of the Solicitation. Technical questions directed to the project manager, is prohibited. These persons shall not be lobbied, either individually or collectively, regarding any questions for bid, proposal, qualification and/or any other solicitations released by the City. To do so is grounds for immediate disqualification from the selection process. The selection process is not considered final until such a time as the Commission has made a final and conclusive determination.

(a) No City appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence either directly or indirectly an officer or employee of the City, City Commission in connection with the awarding of any City Contract.

(b) If any funds other than City appropriated funds have been paid or will be paid to any person for influencing or attempting to influence a member of City Commission or an officer or employee of the City in connection with this Contract, the undersigned shall complete and submit Standard Form-L “Disclosure Form to Report Lobbying”, in accordance with its instructions.

Signed, sealed and delivered this _____ day of _____, 2024.

By: _____

(Printed Name)

(Title)

STATE OF FLORIDA

COUNTY OF _____

Sworn to (or affirmed) and subscribed before me by means of ____ physical presence or ____ online notarization, this ____ day of _____ 2024, by _____.

Notary Public – State of Florida

Personally Known ____ OR Produced Identification ____

Type of Identification Produced _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED

**ATTACHMENT 16:
VENDOR’S CERTIFICATION FOR E-VERIFY SYSTEM**

The undersigned Vendor/Consultant/Contractor (Vendor), certifies the following:

- 1. Vendor is a person or entity that has entered into or is attempting to enter into a contract with the City of North Port (City) to provide labor, supplies, or services to the City in exchange for salary, wages or other remuneration.
- 2. Vendor has registered with and will use the E-Verify System of the United States Department of Homeland Security to verify the employment eligibility of:
 - a. All persons newly hired by the Vendor to perform employment duties within Florida during the term of the contract; and
 - b. All persons, including sub-contractors or sub-consultants, assigned by the Vendor to perform work pursuant to the contract with the City.
- 3. If the Vendor becomes the successful Contractor who enters into a contract with the City, then the Vendor will comply with the requirements of Section 448.095, Fla. Stat. “Employment Eligibility”, as amended from time to time.
- 4. Vendor will obtain an affidavit from all subcontractors attesting that the subcontractor does not employ, contract with, or subcontract with, an unauthorized alien as defined in 8 United States Code, Section 1324A(H)(3).
- 5. Vendor will maintain the original affidavit of all subcontractors for the duration of the contract.
- 6. Vendor affirms that failure to comply with the state law requirements can result in the City’s termination of the contract and other penalties as provided by law.
- 7. Vendor understands that pursuant to Florida Statutes, section 448.095, the submission of a false certification may result in the termination of the contract if one is entered into and may subject the Vendor named in this certification to civil penalties, attorney's fees and costs.

VENDOR: _____ (Vendor’s Company Name)

Certified By: _____
AUTHORIZED REPRESENTATIVE SIGNATURE

Print Name and Title: _____

Date Certified: _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED

**ATTACHMENT 17:
EXEMPT DOCUMENTS REQUEST AND ACKNOWLEDGEMENT (EDRA) FORM**

This Exempt Documents Request and Acknowledgement (“EDRA”) form is sworn to and submitted by the undersigned individual (“Requestor”), personally and on behalf of the below-named entity (“Bidder”), requesting the City of North Port, Florida, a municipal corporation of the State of Florida (“City”), to release to Requestor on behalf of Bidder certain documents exempt from public disclosure as provided by Florida Statutes section 119.071(3), in connection with the following City Solicitation: RFB No. 2024-15 North Port Utilities Administration Building, opening on April 16, 2024. (“Exempt Documents” as further defined in the Bid Documents).

The Requestor must fully complete, sign, and return this form to purchasing@northportfl.gov before the City will consider releasing any Exempt Documents to Requestor. The City will review completed, signed forms on a first-come-first-served basis, subject to staff availability. EDRA forms received less than five business days before Bid Opening will not be reviewed. The Requestor and the Bidder understand and acknowledge that submission of this form in no way guarantees or requires the City to provide the Requestor or the Bidder access to the Exempt Documents.

1. Bidder’s Information:

Entity’s Full Legal Name: _____

Entity’s Business Physical Address: _____

Entity’s Business Mailing Address: _____

Entity’s Federal Identification Number (if applicable): _____

Contact Name: _____

Contact Phone Number: _____

Contact Email: _____

2. Requestor’s Information:

Full Legal Name: _____

Title (in relation to Bidder): _____

Phone: _____

Email: _____

Requestor is a: (Check all that apply and submit a copy of applicable license(s) with this form):

- _____ Florida Licensed Architect
- _____ Florida Licensed Engineer
- _____ Florida Licensed Contractor
- _____ Not Applicable

who is performing work related to a City-owned and/or City-operated building and/or structure.

(Please note that you must hold one of the above Florida licenses to receive documents exempt under Florida Statutes section 119.071(3)(b)).

3. **Exempt Documents Requested:** (Please specify which Exempt Documents are being requested by referencing the titles and labels used in the solicitation):

4. **Reason for the Request/Intended Use:** _____

5. **REQUESTOR’S SWORN ACKNOWLEDGEMENT AND CERTIFICATION FOR BIDDER:**

I, the undersigned individual, personally and as an authorized representative of the Bidder, fully understand and acknowledge my and the Bidder’s responsibilities and obligations under Florida’s Public Records Law, including but not limited Florida Statutes section 119.071(3), as amended to maintain the exempt and/or confidential status of all Exempt Document received and that a knowing violation of Florida Public Records Law constitutes a first-degree misdemeanor, punishable by possible criminal penalties of one year in prison, a \$1,000 fine, or both. Further, I the undersigned individual, personally and as an authorized representative of the Bidder, fully understand and acknowledge my and the Bidder’s liabilities, responsibilities, and obligations, generally, and specifically regarding any received Exempt Documents, as detailed in the Bid Documents.

STATE OF _____
COUNTY OF _____

Sworn to (or affirmed) and subscribed before me by means of physical presence or online notarization, this ___ day of _____ 20__, by _____ (name), as _____ (title) for _____ (entity).

Notary Public

___ Personally Known OR ___ Produced Identification
Type of Identification Produced _____

EXHIBIT TO EDRA ATTACHMENT

Florida Statutes Section 119.071(3) (2023) provides in pertinent part:

119.071 General exemptions from inspection or copying of public records.

(3) SECURITY AND FIRESAFETY.—

- (a) 1. As used in this paragraph, the term “security or firesafety system plan” includes all:
- a. Records, information, photographs, audio and visual presentations, schematic diagrams, surveys, recommendations, or consultations or portions thereof relating directly to the physical security or firesafety of the facility or revealing security or firesafety systems;
 - b. Threat assessments conducted by any agency or any private entity;
 - c. Threat response plans;
 - d. Emergency evacuation plans;
 - e. Sheltering arrangements; or
 - f. Manuals for security or firesafety personnel, emergency equipment, or security or firesafety training.
2. A security or firesafety system plan or portion thereof for:
- a. Any property owned by or leased to the state or any of its political subdivisions; or
 - b. Any privately owned or leased property held by an agency is confidential and exempt from s. 119.07(1) and s. 24(a), Art. I of the State Constitution. This exemption is remedial in nature, and it is the intent of the Legislature that this exemption apply to security or firesafety system plans held by an agency before, on, or after the effective date of this paragraph. This paragraph is subject to the Open Government Sunset Review Act in accordance with s. 119.15 and shall stand repealed on October 2, 2023, unless reviewed and saved from repeal through reenactment by the Legislature.
3. Information made confidential and exempt by this paragraph may be disclosed:
- a. To the property owner or leaseholder;
 - b. In furtherance of the official duties and responsibilities of the agency holding the information;
 - c. To another local, state, or federal agency in furtherance of that agency’s official duties and responsibilities; or
 - d. Upon a showing of good cause before a court of competent jurisdiction.
- (b) 1. Building plans, blueprints, schematic drawings, and diagrams, including draft, preliminary, and final formats, which depict the internal layout and structural elements of a building, arena, stadium, water treatment facility, or other structure owned or operated by an agency are exempt from s. 119.07(1) and s. 24(a), Art. I of the State Constitution.
2. This exemption applies to building plans, blueprints, schematic drawings, and diagrams, including draft, preliminary, and final formats, which depict the internal layout and structural elements of a building, arena, stadium, water treatment facility, or other structure owned or operated by an agency before, on, or after the effective date of this act.
3. Information made exempt by this paragraph may be disclosed:
- a. To another governmental entity if disclosure is necessary for the receiving entity to perform its duties and responsibilities;
 - b. To a licensed architect, engineer, or contractor who is performing work on or related to the building, arena, stadium, water treatment facility, or other structure owned or operated by an agency; or
 - c. Upon a showing of good cause before a court of competent jurisdiction.
4. The entities or persons receiving such information shall maintain the exempt status of the information.

FOR CITY USE ONLY

City Representative Authorizing Distribution:

Printed Name: _____

Title: _____

Signature: _____

Signature Date: _____

Exempt Documents Provided: _____

Date Exempt Documents Provided: _____

Method of Delivery: _____

Notes: _____

**ATTACHMENT 18:
CITY OF NORTH PORT**

BID BOND

In Compliance with F.S. Chapter 255.051

STATE OF FLORIDA, CITY OF NORTH PORT

KNOW ALL BY THESE PRESENTS, that _____, authorized by law to do business as a _____ Contractor in the State of Florida, as Principal, and _____, a Corporation chartered and existing under the laws of the State of _____, as Surety, with its principal offices in the City of _____, and authorized to do business in the State of Florida, and in accordance with Section 255.051, Florida Statutes, are held and firmly bound unto the City of North Port, Florida, in the full and just sum of 5% of the Total Bid Price, in good and lawful money of the United States of America, to be paid upon demand by the City of North Port, to which payment well and truly to be made, we bind ourselves, our heirs, executors, administrators, and assigns, joint and severally and firmly by these presents. The condition of the obligation is such, that whereas the Principal has submitted the attached Bid, dated _____, for **(NORTH PORT UTILITIES ADMINISTRATION BUILDING, RFB 2024-15)**.

NOW, THEREFORE, if the Principal shall withdraw said bid prior to the date of opening the same, or shall within 10 days after the prescribed forms are presented to him for signature enter into a written Contract with City of North Port, Florida, in accordance with the bid as accepted and give a Performance and Payment Bond with good and sufficient surety or sureties as may be required for the faithful performance and proper fulfillment of such Contract and for the prompt payment of all persons furnishing labor or materials in connection therewith or, in the event of failure to enter into such Contract and give such bond within the time specified, if the Principal shall pay the City the difference between the amount specified in said bid and the amount for which the City may procure the required work and/or supplies provided the latter amount to be excess of the amount specified in said bid, then the above obligations shall be void: otherwise, to remain in full force and effect.

IN THE WITNESS WHEREOF, the above written parties have executed this instrument under their several seals dated _____, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Witness as to Principal:

(Principal) (SEAL)

(By)

Witness as to Surety:

Printed Name

(Surety's Name) (SEAL)

(By-As Attorney-in-Fact, Surety)

Affix Corporate Seals and attach proper Power of Attorney for Surety.

THIS PAGE MUST BE COMPLETED AND SUBMITTED

ATTACHMENT 19:

CITY OF NORTH PORT

PERFORMANCE AND PAYMENT BOND
In compliance with F.S. Chapter 255.05(10(a) and Code of the City of North Port Sec. 2-414

BOND NO.: _____
BOND AMOUNT: \$ _____

CONTRACTOR NAME: _____
PRINCIPAL ADDRESS: _____
PRINCIPAL PHONE NO.: _____

SURETY COMPANY NAME: _____
SURETY AGENT: _____
PRINCIPAL ADDRESS: _____
PRINCIPAL PHONE NO.: _____

CITY NAME: City of North Port, Florida
PRINCIPAL ADDRESS: 4970 City Hall Boulevard
North Port, Florida 34288
CITY CONTACT PHONE NO.: (941) 628-3621

CONTRACT NO.: (if applicable) _____

PROJECT ADDRESS: 2024-15
(if applicable) ADDRESS
NORTH PORT FLORIDA 34286

DESCRIPTION OF PROJECT: _____
(if applicable) _____

DESCRIPTION OF IMPROVEMENT: _____

By this Bond, we, _____, as Principal, hereinafter called Contractor, and _____, a corporation organized and existing under the laws of the State of _____, with its principal office in the City of _____, as Surety, hereinafter called Surety, are held firmly bound unto the City of North Port, Florida, as Obligee, hereinafter called City, in the amount of _____ Dollars (\$ _____), for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, personal representatives, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____, entered into a Contract with City for _____

In accordance with drawings and specifications prepared by _____

Which Contract is by reference made a part hereof, and is hereinafter referred to as the CONTRACT.

NOW, THEREFORE, THE CONDITION OF THIS BOND is such that if Contractor:

1. Performs the Contract dated _____, between Contractor and City for construction for the _____ (**RFP 2024-15, NORTH PORT UTILITIES ADMINISTRATION BUILDING**), 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 Contractor with labor, materials, or supplies, used directly or indirectly by Contractor in the prosecution of the work provided for in the Contract: and
3. Pays City all losses, damages, expenses, costs, and attorney’s fees, including appellate proceedings, that City sustains because of a default by Contractor under the Contract: 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.

Any action instituted by City under this bond for payment must be in accordance with the notice and time limitation provisions in Section 255.05(2), 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, the said Contractor

and Surety have signed and sealed this instrument
this _____
(date)

Principal

By:

As President

(SEAL)

Surety

By:

Any Claims under this bond may be addressed to
(name and address of Surety):

Telephone No: _____

Name and address of agent or representative in Florida if different from above:

Telephone No: _____

THIS FORM TO BE UTILIZED BY THE AWARDED VENDOR ONLY

SAMPLE CONTRACT SUBJECT TO CHANGE

This Contract No. _____ (“Contract”) is entered into by and between the City of North Port, Florida, a municipal corporation of the State of Florida (“City”) and _____ a _____ registered to do business in the State of Florida, whose principal place of business is _____ (“Contractor”).

WITNESSETH

NOW THEREFORE, in consideration of the mutual covenants contained herein and for other good and valuable consideration, the sufficiency and receipt of which are acknowledged, the parties agree as follows:

1. CONTRACT TIMING.

- A. Effective Date. This Contract becomes effective on the date approved by City Commission (“Effective Date”) and terminates upon the completion of the work or as otherwise provided in this Contract.
- B. Time Is of the Essence. Time is of the essence in the performance of this Contract.
- (1) Notice to Proceed. The Contractor agrees to commence operations within a mutually agreed upon time following written notification by the City to commence work (“Notice to Proceed”).
- (2) Contract Time. All work performed under the provisions of this Contract must be completed no later than _____ (____)calendar days from the notice to proceed, subject only to delays caused through force majeure. City holidays will be counted as calendar days. The work must be substantially completed no later than _____ (____)calendar days from the notice to proceed, with final completion within _____ (____)calendar days after attaining substantial completion or after delivery to the Contractor of the punch list of items for final completion, whichever is later (“Contract Time”). The Contract Time includes the preparation, submittal, review, and approval of submittals, delivery of materials, and construction, assembly, adjustment, and placement into service for beneficial use of all facilities covered under this Contract.
- (3) Extensions. Contract Time may be extended due to unforeseen circumstances or unknown site conditions that alter the scope of work only as agreed to in writing by both parties and incorporated into the Contract as a change order or amendment.
- C. Process for Completion.
- (1) Delivery of Documents Prior to Substantial Completion. _____ calendar days prior to the expiration of the time for substantial completion, the Contractor must deliver to the City the record drawings and all other submittals required in the Contract. After delivery, the City will review the work identified in the Contract, the record drawings, and other submittals, excluding pay requests.
- (2) Notice. The City must issue a written notice of substantial completion when the City has determined that the work identified in this Contract is substantially complete, and the record drawings are submitted and approved by the City.
- (3) Punch List.

(a) Development and Delivery. The City will develop the final punch list within _____ after delivering the notice of substantial completion. Delivery of the list will not exceed five (5) calendar days after the list has been developed.

(b) Process for Development; Contractor's Response. No later than twenty (20) calendar days after delivering the notice of substantial completion, the City will deliver to the Contractor a punch list and related questions. The punch list must identify the remaining items required to render the construction services complete, satisfactory, and acceptable to the City and for the Contractor to meet its obligations under this Contract. The Contractor must deliver a response to all questions no later than five (5) calendar days after receipt. The City will deliver the final punch list no later than five (5) calendar days after receiving the Contractor's response.

(4) Final Completion. The Contractor must complete the items on the punch list to the satisfaction of the City within the Contract Time and prior to submittal of the application for reduction of retainage or final payment.

2. CONTRACT PRICE.

The Contract Price is _____

3. CONTRACT DOCUMENTS.

A. Scope and Incorporation of Bid Documents. The work includes _____ as described in the Request for Bid No. _____ ("RFB"), including plans, drawings, specifications, addenda, permits, diagrams, and other related documents, as well as the Contractor's response to the RFB (collectively, "Contract Documents"). The Contract Documents are specifically made a part of this Contract and are incorporated by reference. In the event of a conflict between or among the documents or any ambiguity or missing specifications or instruction, the following priority is established:

- (1) This Contract and all attachments and exhibits.
- (2) The RFB, including all attachments and addenda.
- (3) The Contractor's response to the solicitation.
- (4) Specific direction from the City Manager or designee.

4. THE CONTRACTOR'S RESPONSIBILITIES.

A. Supervision.

- (1) The Contractor must supervise and direct all work performed to the best of its ability, give the work all the attention necessary for proper supervision and direction, and only employ workers with sufficient skill to perform the job assigned.
- (2) The Contractor assumes full responsibility for all acts, negligence, or omissions of its employees, for those subcontractors and their employees, and for those of all other persons doing work under a contract with the Contractor in furtherance of this Contract.

B. Labor and Materials.

- (1) The Contractor must provide and pay for all labor, materials, and equipment, including tools, construction equipment, and machinery, as well as all transportation and all other facilities and services necessary for the proper completion of the work in strict conformity with the provisions of this Contract and the Contract Documents.
- (2) The Contractor represents and warrants that all equipment and materials used in the work and made a part of the structures or permanently placed in connection with the work, must be new unless otherwise specified in this Contract or Contract Documents, must be of good quality, free of defects, and in conformity with this Contract and related Contract Documents. The Contractor and the City agree that all equipment and materials not in conformity with this Contract are defective.

C. Public Records Law. In accordance with Florida Statutes Section 119.0701, the Contractor must comply with all public records laws, and must specifically:

- (1) Keep and maintain public records required by the City to perform the service.
 - (a) The timeframes and classifications for records retention requirements must be in accordance with the General Records Schedule GS1-SL for State and Local Government Agencies.
(See <http://dos.state.fl.us/library-archives/records-management/general-records-schedules/>)
 - (b) "Public records" means and includes those items specified in Florida Statutes Section 119.011(12), as amended from time to time, and currently defined as: All documents, papers, letters, maps, books, tapes, photographs, films, sound recordings, data processing software, or other material, regardless of the physical form, characteristics, or means of transmission, made, or received pursuant to law or ordinance or in connection with the transaction of official business with the City. The Contractor's records under this Contract include but are not limited to, supplier/subcontractor invoices and contracts, project documents, meeting notes, e-mails and all other documentation generated during the term and in furtherance of this Contract.
- (2) Upon request from the City's custodian of public records, provide the City, at no cost, with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided for by law. All records kept 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.
- (3) Ensure that project records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the Contract term and if the Contractor does not transfer the records to the City following completion of the Contract, the Contractor must maintain the project records for the time specified in General Records Schedule GS1-SL for State and Local Government Agencies.
- (4) Upon completion of the Contract, transfer, at no cost to the City, all public records in the Contractor's possession or keep and maintain public records required by the City to perform the service. If the Contractor transfers all public records to the City upon completion of the Contract, the Contractor must destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure

requirements. If the Contractor keeps and maintains public records upon the completion of the Contract, the Contractor must comply with all applicable requirements for retaining public records.

(5) IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF FLORIDA STATUTES CHAPTER 119 TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT: CITY CLERK, 4970 CITY HALL BOULEVARD, NORTH PORT, FLORIDA 34286, 941.429.7063 OR HOTLINE 941.429.7270, publicrecordsrequest@northportfl.gov.

(6) Failure of the Contractor to comply with these requirements constitutes a breach of this Contract. Further, the Contractor may be subject to penalties under Florida Statutes Section 119.10.

- D. Contractor's Affidavit. When all work contemplated by this Contract has been completed and has been inspected and approved by the City or its authorized agent, the Contractor must furnish the City with a Contractor's Affidavit in a form acceptable to the City. Signed affidavits of payment are required from all subcontractors hired by the Contractor, unless payment is approved by the surety in accordance with Florida Statutes Section 255.05(11). The affidavits must state whether the subcontractor(s) have been paid in full or whether there are payments remaining. A list of all subcontractors must be furnished to the City prior to any payments against the Contract.
- E. Subcontractors and Suppliers. All contracts between the Contractor and any subcontractor that the Contractor hires must conform to the provisions of this Contract and the Contract Documents. The Contractor must incorporate the requirements of this Contract in the subcontracts. The Contractor must furnish the City with a list of all subcontractors and suppliers prior to any payments against the Contract. All subcontractors are subject to the City's approval. No change in subcontractors or suppliers will be made without written consent and approval from the City. All subcontractors must comply with Florida Statutes Section 448.095 for registration and use of the E-Verify system operated by the United States Department of Homeland Security.
- F. Licenses and Permits. The Contractor must pay all taxes required by law in connection with the activities done in furtherance of this Contract including sales, use, and similar taxes, and unless otherwise mutually agreed to in writing, must secure all licenses and permits necessary for proper completion of the work, and pay any related fees.
- G. Laws and Regulations. Violation of any local, state, or federal law in the performance of this Contract constitutes a breach of this Contract. The Contractor must comply with all laws, ordinances, rules, regulations, and orders of all public authorities relating to the performance of the work required. If any of the Contract documents are at variance with any law or regulation, the Contractor must notify the City promptly upon discovery.
- H. E-Verify System. During the term of this Contract, the Contractor must be registered with and use the Department of Homeland Security E-Verify System as required by Florida Statutes Section 448.095, Employment Eligibility, including but not limited to verifying the work authorization status of all newly hired employees, and requiring all subcontractors to provide an affidavit attesting that the subcontractor does not employ, contract with, or subcontract with an unauthorized alien. The Contractor must maintain a copy of the affidavit for the duration of the Contract.

5. PAYMENT.

- A. Payment Requests. The Contractor must use a City approved form for all payment requests, along with an updated

work schedule reflecting the progress of all work. Payment requests must be accompanied by either written approval and direction of the surety, or receipt of updated affidavits of payment by subcontractors and/or suppliers, in accordance with Florida Statutes Section 255.05(11). The Contractor's payment request must include any changes approved in previous payment requests.

- B. Payment. The Contract Price is net, and all payment requests are payable according to the Florida Local Government Prompt Payment Act (Florida Statutes Section 218.70, *et seq.*). The City or its authorized agent will make payment to the Contractor for all services or work completed or materials furnished in accordance with this Contract only upon certification and approval of the payment request.
- C. Timing of Payments; Retainage. The City will not make payments to the Contractor more frequently than monthly. Payment must be based on the total value of the work completed and accepted during the preceding month, less five percent (5%) retainage. The City must inform the Contractor's surety of any reduction in retainage. Retainage may be reduced upon issuance of the Certificate of substantial completion by the City if, in the sole opinion of the City, sufficient progress on the schedule has been accomplished, all required affidavits have been provided, and the City has retained adequate coverage for the project through the achievement of Final Completion.
- D. Final Payment. The Contractor's submittal for final payment must include the Contractor affidavit, final waiver and release of lien for all subcontractors, materialmen and suppliers, warranty of work, and consent of surety in the forms acceptable to the City. The City's or its authorized agent's approval is required before making final payment for all work, materials, or services furnished under this Contract.

6. LIQUIDATED DAMAGES.

- A. Generally. The work performed must be completed within the Contract Time.
- B. Amount. The City and the Contractor agree that the City will suffer damages if the work is not substantially completed within the Contract Time, plus any extensions allowed by Change Order(s). The parties further agree determining the exact value of the City's damages due to a delay in the substantial completion of the work would be a difficult, time consuming, and costly process. The parties agree that it is in their mutual interest to establish a figure of _____ as liquidated damages (but not as a penalty) to be paid by the Contractor to the City for each calendar day that substantial completion is delayed beyond the Contract Time.
- C. Adjustments prohibited. The parties agree that neither will make any claim to increase or reduce the amount to be paid under liquidated damages as the result of any calculation of actual damages the City suffered as the result of delay in the substantial completion of the work.

7. BOND REQUIREMENTS.

- A. Performance and Payment Bond. The Contractor must provide a performance and payment bond in the form prescribed in Florida Statutes Section 255.05, in the amount of one hundred percent (100%) of the Contract Price, the costs of which are to be paid by the Contractor. The bond will be acceptable to the City only if the surety company:
1. Is licensed to do business in the State of Florida;
 2. Holds a certificate of authority authorizing it to write surety bonds in the State of Florida;

3. Has twice the minimum surplus and capital required by the Florida Insurance Code at the time the invitation to bid is issued;
 4. Is otherwise in compliance with the provisions of the Florida Insurance Code;
 5. Holds a currently valid certificate of authority issued by the United States Department of Treasury under 31 U.S.C. §§ 9304-9308;
 6. Has a current rating of at least Excellent (A or A-) as reported in the most current Best Key Rating Guide, published by A.M. Best Company, Inc., of 75 Fulton Street, New York, New York 10038; and
 7. Has an underwriting limitation of at least two times the dollar amount of the Contract Price.
- B. Substitute Bond Required. If the surety company for any bond furnished by the Contractor files for bankruptcy, has a receiver appointed, is declared bankrupt, becomes insolvent, has an assignment made for the benefit of creditors, has its right to do business terminated in the State of Florida, or ceases to meet the requirements imposed by this Contract, the Contractor must, within five (5) calendar days thereafter, substitute another bond and surety company, both of which are subject to the City's approval.
- C. Surety Acceptance of Terms. The Contractor warrants that the Contractor delivered this Contract to the surety prior to execution of the bond, and that the surety company acknowledged that it has read the surety qualifications and surety obligations imposed by this Contract and satisfies all conditions.
- D. Delivery of the Bond. The Contractor must provide the required performance and payment bond to the City within ten (10) calendar days of the Effective Date. The Contractor's failure to provide the bond timely constitutes a default. Pursuant to Section 2-404 of the Code of City of North Port, Florida, upon default, the City may immediately award the bid to the next lowest responsive and responsible bidder and recover from the Contractor the difference in cost between the original winning bid and the next lowest responsive and responsible bidder. The default is only curable at the option of the City.
- E. Recording the Bond. The Contractor is responsible and bears all costs associated with recording the required bond or security with the Sarasota County Clerk of the Circuit Court. The Contractor must furnish the receipt for and certified copy of the recorded bond to the Purchasing Division at the time of the pre-construction meeting. The default is only curable at the option of the City.

8. CONTRACTOR'S INSURANCE.

- A. Insurance.
- (1) Before performing any work, the Contractor and subcontractors must procure and maintain during the Contract Time the insurance identified in this Section 8 against all claims of injury to persons or damage to property which may arise from or in connection with its performance of the Contract work, unless otherwise specified. The insurance policies must remain in full force and effect until their obligations and warranty periods have been discharged or satisfied.
 - (2) The policies of insurance must be primary and written on forms acceptable to the City, placed with insurance carriers approved and licensed by the State of Florida Department of Financial Services, and meet a minimum financial A.M. Best and Company, Inc. rating of no less than "A – Excellent: FSC VII."

- (3) The City Manager or designee may alter the amounts or types of insurance policies required by this Contract upon written agreement with the Contractor.
- (4) Proof of insurance must be filed by the Contractor with the City within ten (10) calendar days after the Effective Date of this Contract.
- (5) These insurance requirements are minimum requirements and in no way limit the indemnity covenants contained in this Contract. The City in no way warrants that the minimum limits are sufficient to protect the Contractor from liabilities that might arise out of the performance of the work done by the Contractor, its agents, representatives, employees, or subcontractors. The Contractor is free to purchase additional insurance as it may determine necessary. The extent of the Contractor's liability for indemnity of the City must not be limited by insurance coverage or lack thereof, or unreasonably delayed for any reason, including but not limited to, insurance coverage disputes between the Contractor and its carrier.
- B. Workers' Compensation and Employers' Liability Insurance. Coverage pursuant to Florida Statutes, Chapter 440 must apply to all employees at the statutory limits provided by state and federal laws. The policy must include Employers' Liability with a limit of \$1,000,000 for each accident; \$1,000,000 for each employee; and \$1,000,000 policy limit for bodily injury or disease.
- C. Comprehensive Commercial General Liability Insurance. A comprehensive commercial general liability policy, including but not limited to bodily injury, property damage, broad form contractual liability and Explosion, Collapse and Underground (XCU) coverage.
- (1) The general aggregate limit must apply separately to this Contract, or the general aggregate limit must be twice the required occurrence limit.
- (2) The policy must include General Liability with a limit of \$6,000,000 general aggregate; \$3,000,000 each occurrence; \$6,000,000 for products and completed operations; \$100,000 damage to rented premises; and \$100,000 for fire damage.
- D. Automobile Liability Insurance. Automobile liability insurance to include all owned, leased, hired, and non-owned vehicles.
- (1) Automobile liability insurance must be written on a standard ISO form (CA 00 01) covering any auto (Code 1), or if the Contractor has no owned autos, hired (Code 8) and non-owned (Code 9) autos.
- (2) The policy must include liability insurance with a limit of \$1,000,000 for Combined Single Limit (CSL) for each accident; \$1,000,000 per person for bodily injury; \$1,000,000 per accident for bodily injury; and \$1,000,000 per accident for property damage.
- E. Other Insurance. Other insurance is only required if checked below. If not checked, the referenced insurance is not required.
- [X] Builder's Risk Insurance for the Course of Construction or Installation Floater Insurance. The policy must include the "All Risk" (Special Perils) coverage with limits equal to the completed value of the project; and must not include coinsurance penalty provisions.

[] Contractor's Pollution Legal Liability for Projects Involving Environmental Hazards. The policy must include liability insurance with a limit of \$_____ for each occurrence or claim and \$_____ for policy aggregate.

[] Environmental/Pollution Liability. Required when chemicals being used are listed as "hazardous" on www.epa.gov website. The Environmental/Pollution Liability policy must include a limit of \$_____ general aggregate, and \$_____ each occurrence. The Contractor must notify the City prior to usage of hazardous chemicals so that adequate insurance coverage is provided prior to use. Failure to notify the City shall be deemed a material breach of this Contract.

F. Waiver of Subrogation. All required insurance policies, except for Workers' Compensation, are to be endorsed with a Waiver of Subrogation. The insurance companies, by proper endorsement or through other means, must agree to waive all rights of subrogation against the City, its Commissioners, officers, officials, employees, volunteers, and the City's insurance carriers, for losses paid under the terms of these policies that arise from the contractual relationship or work performed by the Contractor for the City. It is the Contractor's responsibility to notify its insurance company of the Waiver of Subrogation and request written authorization or the proper endorsement. ADDITIONALLY, THE CONTRACTOR, ITS OFFICERS, OFFICIALS, AGENTS, EMPLOYEES, VOLUNTEERS, AND ANY SUBCONTRACTORS, AGREE TO WAIVE ALL RIGHTS OF SUBROGATION AGAINST THE CITY AND ITS INSURANCE CARRIERS FOR ANY LOSSES PAID, SUSTAINED, OR INCURRED, BUT NOT COVERED BY INSURANCE, THAT ARISE FROM THE CONTRACTUAL RELATIONSHIP OR WORK PERFORMED. THIS WAIVER APPLIES TO ANY DEDUCTIBLES OR SELF-INSURED RETENTIONS FOR WHICH THE CONTRACTOR OR ITS AGENTS MAY BE RESPONSIBLE.

G. Policy Form.

(1) All policies required by this Contract, except for Workers' Compensation, or unless specific approval is given by Risk Management through the City's Purchasing Division, are to be written on an occurrence basis, and must name the City of North Port, Florida, its Commissioners, officers, agents, employees, and volunteers as additional insured as their interest may appear under this Contract. Claims made policies may be accepted for professional liability, hazardous materials and other risks as are authorized by the City's Purchasing Division. All claims made policies contributing to the satisfaction of the insurance requirements must have an extended reporting period option or automatic coverage of not less than two (2) years. If provided as an option, the Contractor must purchase the extended reporting period on cancellation or termination unless a new policy is affected with a retroactive date, including at least the last policy year.

(2) Insurance requirements itemized in this Contract, and required of the Contractor, must be provided by or on behalf of all subcontractors to cover their operations performed under this Contract. The Contractor is responsible for any modifications, deviations, or omissions in these insurance requirements as they apply to its subcontractors.

(3) Each insurance policy required by this Contract must:

(a) Apply separately to each insured against whom claim is made and suit is brought, except with respect to limits of the insurer's liability.

(b) Be endorsed to state that coverage must not be suspended, voided, or cancelled by either party except after notice is delivered in accordance with the policy provisions. The Contractor is to notify the City's Purchasing Division of any occurrence by written notice via certified mail, return receipt requested.

- (4) The City retains the right to review, at any time, coverage, form, and amount of insurance.
 - (5) The Contractor is solely responsible for payment of all premiums for insurance required in this Contract and is solely responsible for the payment of all deductibles, SIR (self-insured retentions), any loss or portion of any loss that is not covered by any available insurance policy, and retention as set forth in the policies, whether the City is an insured under the policy. The Contractor's insurance is considered primary for any loss, regardless of any insurance maintained by the City.
 - (6) All certificates of insurance must be approved by the City before commencement of any work. All required certificates of insurance must be accompanied by a copy of the additionally insured documents/endorsements (CG 20101185 or combination of CG 2010370704 and CG 20370704). Certificates of insurance evidencing claims made or occurrences form coverage and conditions to this Contract, as well as the contract number and description of work, are to be furnished to the City's Purchasing Division at 4970 City Hall Boulevard, Suite 337, North Port, FL 34286 prior to commencement of the work and a minimum of thirty (30) calendar days prior to expiration of the insurance contract when applicable. The certificate of insurance issued by the underwriting department of the insurance carrier must certify compliance with the insurance requirements of this Contract. No changes may be made to these specifications without prior written approval by the City Manager or designee.
- H. Notices. Notices of Accidents (Occurrences) and Notices of Claims associated with work being performed must be provided to the Contractor's insurer(s) and the City's Purchasing Division as soon as practicable after notice to the insured Contractor.

9. INDEMNITY, DEFENSE, AND RELEASE.

- A. **TO THE EXTENT PERMITTED BY FLORIDA LAW, THE CONTRACTOR ASSUMES ALL LIABILITY FOR, AND RELEASES AND AGREES TO DEFEND, INDEMNIFY, PROTECT, AND HOLD HARMLESS THE CITY, ITS COMMISSIONERS, OFFICERS, AGENTS AND EMPLOYEES, FROM ALL LIABILITIES, FINES, CLAIMS, ASSESSMENTS, SUITS, JUDGMENTS, DAMAGES, LOSSES AND COSTS, INCLUDING CONSEQUENTIAL, SPECIAL, INDIRECT, AND PUNITIVE DAMAGES, (INCLUDING, BUT NOT LIMITED TO, REASONABLE ATTORNEYS' FEES AND COURT COSTS, WHETHER THE FEES AND COSTS ARE INCURRED IN NEGOTIATIONS, AT THE TRIAL LEVEL OR ON APPEAL, OR IN THE COLLECTION OF ATTORNEYS' FEES), ARISING OUT OF ANY ACTS, ACTIONS, BREACHES, NEGLIGENCE OR OMISSIONS OF THE CONTRACTOR, OR THE CONTRACTOR'S OFFICERS, EMPLOYEES, AGENTS, SUB-CONTRACTORS, SUB-CONSULTANTS, AND OTHER PERSONS EMPLOYED OR UTILIZED BY THE CONTRACTOR IN THE PERFORMANCE OF, OR THE FAILURE TO PERFORM, THIS CONTRACT. THIS CONTRACT DOES NOT CONSTITUTE A WAIVER OF SOVEREIGN IMMUNITY OR CONSENT BY THE CITY OR ITS SUBDIVISIONS TO SUIT BY THIRD PARTIES.**
- B. **FURTHER, THE CONTRACTOR MUST FULLY INDEMNIFY, DEFEND, AND HOLD HARMLESS THE CITY OF NORTH PORT, FLORIDA, FROM ANY SUITS, ACTIONS, DAMAGES, AND COSTS OF EVERY NAME AND DESCRIPTION, INCLUDING ATTORNEYS' FEES, ARISING FROM, OR RELATING TO VIOLATION OR INFRINGEMENT OF A TRADEMARK, COPYRIGHT, PATENT, TRADE SECRET, OR INTELLECTUAL PROPERTY RIGHT.**
- C. The City must provide all available information and assistance that the Contractor may reasonably require regarding any claim. In the event of a claim, the City must promptly notify the Contractor in writing by prepaid certified mail (return receipt requested) or by delivery through any nationally recognized courier service (Federal Express, UPS, USPS, or others) which provides evidence of delivery, at the address provided for receipt of notices in this Contract.

- D. The insurance coverage and limits required in this Contract may or may not be adequate to protect the City and the insurance coverage must not be deemed a limitation on the Contractor's liability under the indemnity provided in this section. In any proceedings between the parties arising out of or related to this indemnity provision, the prevailing party must be reimbursed all costs, expenses, and reasonable attorney fees through all proceedings (at both trial and appellate levels).
- E. This Contract must not be deemed to affect the rights, privileges, and immunities of the City as set forth in Florida Statutes Section 768.28.
- F. The terms of this section survive the termination or completion of this Contract.

10. TERMINATION.

- A. Termination With or Without Cause. The City Manager or designee may terminate the work under this Contract with or without cause, in whole or in part, whenever the City Manager or designee determines that termination is in the City's best interest.
 - (1) Any termination must be effective by delivery to the Contractor of a written notice of termination at least thirty (30) calendar days before the date of termination, specifying the extent to which performance of the work is terminated and the date upon which the termination becomes effective.
 - (2) Except as otherwise directed, the Contractor must cease all work on the date of receipt of the notice of termination or other date specified in the notice; place no further orders or subcontracts for materials, services, or facilities except as necessary for completion of the portion of the work not terminated; terminate all vendors and subcontracts; and settle all outstanding liabilities and claims.
 - (3) The Contractor must deliver to the City all documents (including but not limited to reports, designs, specifications, and all other data) prepared or obtained by the Contractor in connection with its services.
 - (4) The City must pay the Contractor in full settlement of all claims by it hereunder as the work actually completed bears to the entire work under this Contract, as determined by the City, less payments already made to the Contractor, and any amounts withheld by the City to settle claims or to pay indebtedness of the Contractor in accordance with the provisions of this Contract. The City has no obligation under any circumstance to make any payment to the Contractor for services that have not been performed or that are performed after the termination date.
- B. Termination for Non-Appropriation. The parties acknowledge and agree that the financial obligations of the City in this Contract, or any subsequent contract entered into or referenced when the City is a party, are subject to the provisions of Florida Statutes Section 166.241, as amended, regardless of whether a particular obligation has been expressly so conditioned. Since funds are appropriated annually by the City Commission on a fiscal year basis, the City's legal liability for the payment of any costs must not arise unless and until appropriations for the costs are approved for the applicable fiscal year by the City Commission; nor will liability arise if a request for the appropriations is excluded from the budget approved by the City Commission. Notwithstanding the foregoing, no Commissioner, officer, employee, director, member or other natural person or agent of the City will have any personal liability in connection with a breach of the provisions of this Section or in the event of a default by the City under this Section. This Contract does not constitute an indebtedness of the City nor an obligation of the City to levy or pledge any form of taxation nor an obligation for which the City has levied or pledged any form of

taxation.

- C. Termination for Abandonment. If the Contractor abandons performance under this Contract, the City Manager or designee may terminate this Contract upon three (3) calendar days' written notice to the Contractor indicating the intention to do so. The written notice must state the evidence indicating the Contractor's abandonment.
- D. Contractor's Termination. The Contractor may terminate this Contract only in the event of the City failing to pay the Contractor's properly documented and submitted payment request within ninety (90) calendar days of the approval by the City's Administrative Agent, or if the project is suspended by the City for a period greater than ninety (90) calendar days.
- E. Court Proceedings. The City Manager or designee reserves the right to terminate this Contract in the event the Contractor is placed in either voluntary or involuntary bankruptcy, a receiver is appointed for the Contractor, or an assignment is made for the benefit of creditors.
- F. Breach. In the event the Contractor is in breach of this Contract, the City must provide written notice of the breach and the Contractor will have ten (10) calendar days to cure, calculated from the date the Contractor receives the notice. If the Contractor fails to cure within the ten (10) calendar days, the City Manager or designee may immediately terminate the Contract and/or refuse to make any additional payment, in whole or in part, and may demand the return of a portion or the entire amount previously paid to the Contractor due to:
- (1) The quality of a portion or all the Contractor's work not being in accordance with the requirements of this Contract;
 - (2) The quantity of the Contractor's work not being as represented in the Contractor's payment request, or otherwise;
 - (3) The Contractor's rate of progress is, in the City's opinion, whether substantial or final completion, or both, inexcusably delayed;
 - (4) The Contractor's failure to pay the Contractor's project related obligations including, but not limited to, subcontractors, laborers, materialmen, equipment, and other suppliers;
 - (5) Claims made, or likely to be made, against the City or its property;
 - (6) Loss caused by the Contractor;
 - (7) The Contractor's failure or refusal to perform any of the obligations to the City, after written notice and a reasonable opportunity to cure, as set forth above; or
 - (8) Violation of any local, state, or federal law in the performance of this Contract constitutes a breach of this Contract.
- G. Waiver. Any delay or failure to enforce any breach of this Contract by either the City or the Contractor will not be binding upon the waiving party unless the waiver is in writing. In the event of a written waiver, the waiver will not affect the waiving party's rights with respect to any other or further breach. The making or acceptance of a payment by either party with knowledge of the existence of a default or breach must not operate or be construed

to operate as a waiver of any subsequent default or breach.

H. Payment Adjustments. If the City makes written demand upon the Contractor for amounts previously paid by the City, the Contractor must promptly comply with the demand. The City’s rights hereunder survive the term of this Contract and are not waived by final payment and/or acceptance.

I. E-Verify Violation.

(1) If the City has a good faith belief that the Contractor has knowingly violated Florida Statutes Section 448.09(1), then this Contract may be terminated by the City.

(2) If the City has a good faith belief that a subcontractor has knowingly violated Florida Statutes Section 448.09(1), but the Contractor has otherwise complied, then the City must promptly notify the Contractor and order the Contractor to immediately terminate this Contract with the subcontractor.

(3) The Contractor must comply with Florida Statutes Section 448.095(2) for any challenge to termination of this Contract under this Section.

J. Remedies. In the event of a default or breach of the Contract terms, the City may avail itself of every remedy specifically given to it now existing at law or in equity, and every remedy must be in addition to every other remedy so specifically given or otherwise so existing and may be exercised from time to time and as often and in the order as may be deemed expedient by the City. The exercise, or the beginning of the exercise, of one remedy must not be deemed to be a waiver of the right to exercise, at the same time or thereafter, any other remedy. The City’s rights and remedies as set forth in this Contract are not exclusive and are in addition to any other rights and remedies available to it in law or in equity.

11. EQUAL EMPLOYMENT OPPORTUNITY.

The City of North Port, Florida, consistent with the provisions of Title VII of the Civil Rights Act of 1964 (“Title VII”) and the regulations issued pursuant to Title VII and Florida Statutes Section 287.09451, states that in any contract entered into pursuant to the advertisement, minority business enterprises will be afforded full opportunity to submit replies in response to the advertisement and will not be discriminated against on the grounds of race, color or national origin in consideration for an award.

12. NOTICES.

Any notice, demand, communication, or request required or permitted by this Contract must be sent by certified mail, return receipt requested, or by delivery through any nationally recognized courier service (Federal Express, UPS, USPS, and others) that provides evidence of delivery, at the address provided for receipt of notices in this Contract and e-mailed to:

As to the City: _____ Project Manager
City of North Port

North Port, Florida _____

With copies of claims and demands sent to: City of North Port, Florida
City Attorney’s Office
4970 City Hall Boulevard
North Port, Florida 34286
northportcityattorney@northportfl.gov

As to Contractor: _____

Notices are effective when received at the addresses specified above. Changes to the respective addresses may be made from time to time by either party by written notice. This Section must not be construed to restrict the transmission of routine communications between representatives of the Contractor and the City.

13. ATTORNEYS’ FEES.

In any proceedings between the parties arising out of or related to this Contract, the prevailing party must be reimbursed all costs, expenses, and reasonable attorneys’ fees through all proceedings, at both trial and appellate levels.

14. SCRUTINIZED COMPANIES.

- A. Certification. As required by Florida Statutes Section 287.135(2), for contracts of any amount, the Contractor must certify on a form provided by the City, that it is not on the Scrutinized Companies that Boycott Israel List, created pursuant to Florida Statutes Section 215.4725, and that it is not engaged in a boycott of Israel.
- B. Requirements. As required by Florida Statutes Section 287.135(5), for contracts of \$1,000,000 or more, the Contractor must certify on a form provided by the City, that all of the following are true:
 - (1) The Contractor is not on the Scrutinized Companies that Boycott Israel List, created pursuant to Florida Statutes Section 215.4725, and that it is not engaged in a boycott of Israel; and
 - (2) The Contractor is not on the Scrutinized Companies with Activities in Sudan list or the Scrutinized Companies with Activities in Iran Petroleum Energy Sector list, created pursuant to Florida Statutes Section 215.473; and
 - (3) The Contractor is not engaged in business operations in Cuba or Syria.
- C. Termination. If the Contractor provides a false certification or has been placed on one of the above-noted Lists of Scrutinized Companies or has engaged in business operations in Cuba or Syria, the Contractor will be in breach of this Contract and the City may terminate this Contract.
- D. Penalty.
 - (1) A Contractor that has been found to have provided a false certification may be subject to a civil penalty equal

to the greater of \$2 million or twice the amount of this Contract, plus all reasonable attorneys' fees and costs, including any costs for investigations that led to the finding of the false certification; and

- (2) Will be ineligible to bid on any contract with the City for three (3) years after the date the City determined that the Contractor submitted a false certification.

15. FORCE MAJEURE.

A. Should performance of any obligation created under this Contract become illegal or impossible by reason of:

- (1) A strike or work stoppage, unless caused by a negligent act or omission of either party;
- (2) An act of God, tornado, hurricane, flood, sinkhole, fire, explosion, landslide, earthquake, epidemic, pandemic, quarantine, pestilence, or extremely abnormal and excessively inclement weather;
- (3) An act of a public enemy, act of war, terrorism, effect of nuclear radiation, blockage, insurrection, riot, civil disturbance, state of martial law, or national or international calamity;
- (4) A declared emergency of the federal, state, or local government; or
- (5) Any other like event that is beyond the reasonable control of the non-performing party;

then the performance of the obligation is suspended during the period of, and only to the extent of, the prevention or hindrance, provided that:

- (6) The non-performing party provides written notice within five (5) calendar days of the event of *force majeure*, describing the event in sufficient detail, including but not limited to: the nature of the occurrence, a good faith estimate of the duration of the delay, proof of how the event has precluded the non-performing party from performing, and the means and methods for correcting the delay; and continues to furnish timely reports of all actions required for it to commence or resume performance of its obligations under this Contract;
- (7) The excuse of performance is no greater in scope or duration than required by the event of *force majeure*;
8. No obligations of either party that arose before the *force majeure* are excused as a result of the event of *force majeure*; and
9. The non-performing party uses all reasonable diligence to remedy its inability to perform.

B. Economic hardship of a party does not constitute an event of *force majeure*. A party must not be excused from performance due to forces that it could have reasonably prevented, removed, or remediated prior to, during, or immediately after their occurrence.

C. The non-performing party's affected obligations under this Contract will be temporarily suspended during, but not longer than, the continuance of the event of *force majeure* and a reasonable time thereafter as may be required to commence or resume performance of its obligations. Notwithstanding the above, performance will not be excused under this Section for a period exceeding two (2) consecutive months, provided that in extenuating circumstances, the City may excuse performance for a longer term.

- D. The term of this Contract will be extended by a period equal to that during which the non-performing party's performance is suspended under this Section.

16. MISCELLANEOUS.

- A. Authority to Execute. The signature by any person to this Contract will be deemed a personal warranty that the person has the full power and authority to bind any corporation, partnership, or any other business or governmental entity for which the person purports to act hereunder.
- B. Binding Effect/Counterparts. By the signatures affixed hereto, the parties intend to be bound by the terms and conditions hereof. This Contract is binding upon and will inure to the benefit of the parties and their respective heirs, executors, administrators, successors, and assigns. It may be signed in counterparts.
- C. Governing Law and Venue. The laws of the State of Florida govern the rights, obligations, and remedies of the parties under this Contract. The exclusive venues for any legal or judicial proceedings in connection with the enforcement or interpretation of this Contract are the Circuit Court of the Twelfth Judicial Circuit in and for Sarasota County, Florida, and the United States District Court for the Middle District of Florida.
- D. No Agency. Nothing contained herein must be deemed or construed as creating the relationship of principal and agent, or of partnership or joint venture, between the parties, it being understood and agreed that no provision, or any acts of the parties will be deemed to create any relationship between them other than that as detailed.
- E. Severability. In the event any court holds any provision of this Contract to be illegal, invalid, or unenforceable, the remaining provisions must be valid and binding upon the parties. One or more waivers by either party of any breach of any provision, term, condition, or covenant must not be construed as a waiver of a subsequent breach by the other party.
- F. Headings. The descriptive titles appearing in each respective paragraph are for convenience only and are not a part of this Contract and do not affect its construction.
- G. Complete Contract. This Contract incorporates and includes all prior negotiations, correspondence, agreements, or understandings between the parties, and the parties agree that there are no commitments, agreements, or understandings concerning the subject matter of this Contract that are not contained in this document. This Contract supersedes all other agreements between the parties, whether oral or written, with respect to the subject matter.
- H. Amendment. No amendment, change, or addendum to this Contract is enforceable unless agreed to in writing by both parties and incorporated into this Contract. Any amendments changing the City's financial obligations under this Contract will require approval by the City Commission. The City Commission hereby authorizes the City Manager or designee to approve and execute all Contract amendments on behalf of the City that do not change the City's financial obligations under this Contract.
- I. Assignment. The Contractor must not assign this Contract or any right or responsibility without the written consent of the City.
- J. Non-Discrimination. The City of North Port, Florida does not discriminate on the basis of race, color, national origin, sex, age, disability, family, or religious status in administration of its programs, activities, or services. The Contractor must not administer this Contract in an unlawfully discriminatory manner, nor deny participation in or

the benefits of same to any individual based on that individual's race, color, national origin, sex, age, disability, family or religious status, marital status, sexual orientation, gender identity or expression, or physical characteristic.

IN WITNESS WHEREOF, the parties have executed this Contract on the dates as indicated below.

CONTRACTOR

By: _____
Name: _____
Title: _____

Approved by the City Commission of the City of North Port, Florida on _____, 202__



City of North Port
FINANCE DEPARTMENT/PURCHASING DIVISION
4970 CITY HALL BLVD, STE 337
NORTH PORT, FLORIDA 34287
Office: 941.429.7170
Fax: 941.429.7173
Email: purchasing@cityofnorthport.com



March 22, 2024
ADDENDUM 1

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE APRIL 16, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

Statement: To all Prime Contractors please remind your sub-contractors to send any pricing to you and not to the City of North Port. The City of North Port only deals with the Prime Contractor of Projects.

1Q: I am inquiring to ask if there is a construction cost estimate or budget associated with the North Port Utilities Administration Building Project.

1A: \$16,387,916.00

2Q: To Clarify for bid solicitation purposes, are we allowed to transmit out to subcontractors, the following exempt status documents: Attachments 1C North Port Architectural and Lighting; 1D North Port electrical; 1E North Port Fire Protection; 1F North Port Industrial; 1G North Mechanical; 1H North Port Plumbing and 1I North Port Structural.

2A: No

3Q: Do we need to ask each trade to fill out attachment 17?

3A: Each contractor and subcontract must fill out their own forms.

4Q: Do we need to list as a NDA (Non Disclosure Agreement)?

4A: No every contractor and subcontractor have to fill out and turn in their own form.

5Q: The landscape plans, LP101-LP601, shown on the “approved” civil index appear to be missing. Please provide.

5A: Landscape plans LP101-LP601 will be provided in addendum 1 attachments.

6Q: Civil plans “Attachment 1J Construction Plans” contains 21 sheets and “Attachment 1Q Final Plans” contains 22 sheets. Which civil set is to be used for the purpose of the bid proposal? (“Attachment 1Q Final” appears to be a pdf scan of marked up files in which the plan scales are incorrect and the fine

detail is illegible. Please provide original drawing files of this set, if required). Example from “1Q Final sheet C105”:



6A: Use Attachment “1Q Final Plans” for bidding purposes. Regarding the pdf quality, there may have been a downloading error on the user’s side. Plans are legible when performing a test download. Please try downloading again.

7Q: Sheet A000 and A010 shows the area under the East end of the canopy as Stamped Concrete. The Civil plans C104 show a legend indicating “Pavers” at this same area. Please clarify the areas of paver work vs stamped concrete.

7A: The area under the East end of the canopy will be stamped concrete. Drawing updates clarifying this design will provided in addendum 1 attachments .

8Q: C103/C104 depict the drive entry apron from Children Way with a hatched pattern with no labels. Is this apron area to be pavers or other materials? Please detail.

8A: The entry apron will be concrete – The hatch pattern update is provided in addendum 1 attachments .

9Q: A000 Site indicates a “Gazebo” at the NE corner of the project area. Please provide details.

9A: The Gazebo has been eliminated from the project. The civil and architectural site plans will be updated with this change in an upcoming addendum.

10Q: A000 shows a “Fence Line” along the wooded area and “Fence” at the Admin Building and Employee Parking areas. Is the type of fence shown on the “Courtyard Fence Detail” A012 to be used for both the Fence and Fence Line?

10A: The fence is now only located along the wooded area. The north and south ends of property are the 6' precast privacy wall and the front is the decorative fence. Landscape drawings and updated civil provided in provided in addendum 1 attachments .

11Q: A000 Site. Please provide construction details for the "6' Tall Privacy Wall" shown.

11A: Civil drawing specifies a "6' precast privacy wall" BOD .

12Q: A000 Site shows a "Walking Path" not shown on the Civil drawings. Please clarify if a walking path is required, and if so, please add to the civil drawings. Indicate if the path will be constructed per the "Typical Sidewalk/Community Trail" detail shown on Final C113/Construction C112 sheets.

12A: The walking path will be crushed shell. Intent clarified in addendum 1 attachments .

13Q: Sheet E002, Note 7 says the approved reference for the project is NFPA 70-2019. Please confirm this is to be used in lieu of NFPA 70-2020.

13A: NFPA 70-2020 will be used in lieu of NFPA 70-2019.

14Q. May I ask, it seems the IT/AV drawings are not part of the set that was provided. Do you know if those scopes of work are being handled differently? Perhaps under a separate RFB that may be direct with the city?

14A: IT/AV is included. See systems series E400 systems drawings in electrical set.

15Q: Sheet S300 / detail 8 Steel Plate Base Details. Please provide a schedule with dimensions for the various plate types.

15A: Base Plate schedule will be clarified in upcoming addendum. For now assume base plates are Type C or Type K depending on column profile.

16Q: Are we to use the Final Permit drawings that were issues with the RFB Documents? If so, they are missing all the Landscape/Irrigation drawings.

16A: Landscape drawings will be provided in addendum 1 attachments .

17Q: Page 51 of the solicitation says "All Green spaces to be filled in", is this an error?

17A: Yes. Please delete the following: All GREEN spaces in the Bid Form to be filled.

18Q: Can the bid schedule be made less comprehensive?

18A: Yes, but the successful bidder will need to break it out for the schedule of values.

19Q: SP-14 60% of work has to be self-preformed by the prime. Is this correct?

19A: No, this requirement will not be applicable to this project.

20Q: There is a section that calls for mobilization to occur after all submittals are approved, is that correct?

20A: Mobilization, clearing and earthwork can begin as submittals are being reviewed. Certain submittals will need to be approved before civil site infrastructure is installed.

21Q: Is it in the City's interest to condense the bid form?

21A: Yes, but the successful bidder will need to break it out for the schedule of values. Please use the existing bid form and populate the total in each tab. If that is not practical please let us know.

22Q: Do we need to fill out the tabs of the bid schedule?

22A: The successful bidder will need to fill out the tabs but does not need to complete the detailed line items for bid purposes. A detailed schedule of values will be required of the successful bidder during the submittal process.

23Q: The General Contractors cannot send the plans to their sub-contractors?

23A: The nonexempt plans can be shared. The exempt plans every sub-contractor or general contractor has to submit their own Attachment 17 to receive the exempt plans.

24Q: Do sub contractors submit Attachment 17 to their prime contractors?

24A: No, all Attachment 17 forms come to purchasing@northportfl.gov

25Q: Are there any grants attached to this project?

25A: No

26Q: Will the City Direct Purchase?

26A: No

27Q: Is there a geotechnical survey for this project?

27A: Yes, see attached.

28Q: Was there a gopher tortoise survey done?

28A: Yes

29Q: Is this a LEED certified project?

29A: No

30Q: Has the project been submitted for permits?

30A: Yes, DOH Water, FDEP Wastewater, a City of North Port development order and the ERP (Environmental Resource Permit) have been obtained. The successful bidder will need to obtain the building permit.

31Q: Have the plans been submitted to the Building Department for review?

31A: No.

32Q: The City will not go after a LEED certification for this project?

32A: At this time, the City does not plan to pursue LEED certification.

33Q: Are there any additional plans other than the exempt plans?

33A: Yes, The attachments for this project are currently listed on page 4 of the solicitation. Any other new or revised attachments will be added per addenda.

34Q: We cannot publish the plans on a bid site?

34A: No

35Q: Is there a minimum required amount of bids to be received?

35A: The City code and manual does not set a requirement to the amount of bids received.

36Q: Does the City have a NTP time?

36A: NTP will be established at the pre-construction meeting, potentially NTP could be around two months after the bid opening.

37Q: Is there an escalation contingency?

37A: No.

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

Keith Raney, CPPB, CPPO, NIGP-CPP
Contract Administrator II
Finance Department/Purchasing Division
4970 City Hall Blvd.
North Port, Florida 34286
Tel: 941.429.7103
Fax: 941.429.7173
E-mail: kraney@cityofnorthport.com

Receipt of Addendum No. 1 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.1



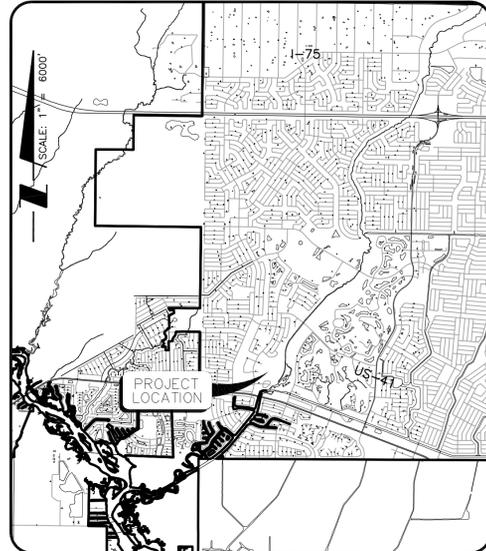
Stantec

6920 Professional Parkway East, Sarasota, FL 34240-8414
Phone 941-907-6900 • Fax 941-907-6910
Certificate of Authorization #27013 • www.stantec.com

CONSTRUCTION PLANS FOR NORTH PORT UTILITIES ADMINISTRATION AND FIELD OPERATIONS COMPLEX

LOCATED WITHIN SECTION 30
TOWNSHIP 39 SOUTH, RANGE 21 EAST
CITY OF NORTH PORT, FLORIDA

A DEVELOPMENT BY
CITY OF NORTH PORT UTILITIES
ENGINEERING DIVISION
PAN AMERICAN BOULEVARD
NORTH PORT, FL 34286



LOCATION MAP



SITE MAP

DATE: 2022.09.20
PROJECT NUMBER: 2270451002

PROJECT DATA

OWNERSHIP
CITY OF NORTH PORT
4970 CITY HALL BLVD
NORTH PORT, FLORIDA 34286

CHARACTER AND INTENDED USE
ADMINISTRATION BUILDINGS (13,100 SF), WAREHOUSE (32,907 SF) AND ASSOCIATED PARKING

PROJECT AREA 17.31 ACRES
OPEN SPACE AREA 9.55 ACRES (55%)

DRAINAGE
STORMWATER MANAGEMENT SYSTEM SHALL BE OWNED, OPERATED AND MAINTAINED BY THE CITY OF NORTH PORT.

UTILITY OWNERSHIP
POTABLE WATER - CITY OF NORTH PORT UTILITIES
SANITARY SEWER - CITY OF NORTH PORT UTILITIES
RECLAIMED WATER - CITY OF NORTH PORT UTILITIES

DATUM
ELEVATIONS SHOWN ARE RELATIVE TO NATIONAL GEODETIC VERTICAL DATUM (NAVD) 1988

BUILDING AREAS

BUILDING	SQ FOOTAGE (GFA)	FAR	BLDG HEIGHT	LOT COVERAGE	BLDG HEIGHT
ADMINISTRATION	13,100	0.017	20 FEET	1.70%	TWO BUILDINGS AS SHOWN WITH A SHARED BREEZEWAY
WAREHOUSE	26,750	0.035	20 FEET	3.50%	
WAREHOUSE (FUTURE)	6,157	0.008	40 FEET	0.80%	NOT PART OF THE FIRST PHASE
TOTAL	46,007	0.06	N/A	6%	INCLUDES FUTURE WAREHOUSE EXPANSION

NOTES

- BOUNDARY DATA SHOWN IS FOR INFORMATIONAL PURPOSES ONLY AND DOES NOT CONSTITUTE A BOUNDARY SURVEY.
- ZONING: PLANNED COMMUNITY DEVELOPMENT (PCD)
- THE PROJECT IS LOCATED WITHIN FLOOD ZONE X & AE, PER FIRM COMM. PANEL NO. 12115C0386F (NOVEMBER 4, 2016)
- TOPOGRAPHY IS COMPILED FROM FIELD INFORMATION OBTAINED BY STANTEC AND IS BASED ON 1988 DATUM.
- THIS PROJECT HAS BEEN DESIGNED TO PROVIDE REASONABLE ASSURANCE THAT ALL APPLICABLE PERMITS CAN BE OBTAINED.
- ANY SIGNIFICANT HISTORICAL OR ARCHEOLOGICAL RESOURCES DISCOVERED DURING DEVELOPMENT ACTIVITIES SHALL BE IMMEDIATELY REPORTED TO THE FLORIDA DIVISION OF HISTORICAL RESOURCES AND TREATMENT OF SUCH RESOURCES SHALL BE DETERMINED IN COOPERATION WITH THE DIVISION OF HISTORICAL RESOURCES AND THE CITY OF NORTH PORT. TREATMENT OF THE RESOURCES MUST BE COMPLETED BEFORE RESOURCE-DISTURBING ACTIVITIES ARE ALLOWED TO CONTINUE. IF HUMAN REMAINS ARE ENCOUNTERED, THE PROVISIONS CONTAINED IN CHAPTER 872, FLORIDA STATUTES (OFFENSES CONCERNING DEAD BODIES AND GRAVES) SHALL BE FOLLOWED.
- ALL TRAFFIC CONTROL DEVICES SHALL COMPLY WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), FDOT DESIGN STANDARDS AND THE CITY OF NORTH PORT.
- REQUIRED SETBACKS:

FRONT YARD	SIDE YARD	REAR YARD
0 FEET	0 FEET	20 FEET

9. REQUIRED PARKING

LAND USE	STANDARD	SQ FT	REQUIRED	PROVIDED
ADMINISTRATION (OFFICE)	1 SPACE/250 SQ. FT.	13,100	52	164
WAREHOUSE (OFFICE)	1 SPACE/250 SQ. FT.	9,470	38	
WAREHOUSE (STORAGE)	1 SPACE/1,500 SQ. FT.	17,280	12	
WAREHOUSE (FUTURE)	1 SPACE/1,500 SQ. FT.	6,157	4	
HANDICAP SPACES			5	6
TOTAL:			111	170

*PARKING SPACES INCLUDES WEST LOT IN FRONT OF ADMINISTRATION BUILDING AND SOUTH LOT FOR EMPLOYEES.

10. LOADING SPACES:

STANDARD	REQUIRED	PROVIDED
25,001-60,000 SQ. FT.	2	2*

*SPACE EXCEEDING THE MINIMUM REQUIREMENT FOR LOADING IS SHOWN SOUTH OF THE WAREHOUSE BUILDING TO ACCOMMODATE ALL LOADING.

INDEX TO SHEETS

MAS SUBMITTAL
INF SUBMITTAL
SWF WMD SUBMITTAL

SHEET	DESCRIPTION
C101	COVER
C102	AERIAL
C103	SITE PLAN
C104-C105	GRADING AND DRAINAGE PLANS
C106	UTILITY PLAN
C107	WATER MAIN PLAN AND PROFILE
C108-C110	SANITARY SEWER PLAN AND PROFILES
C111-C112	REUSE MAIN PLAN AND PROFILE
C113-C114	PAVING AND GRADING DETAILS
C115-C117	DRAINAGE CONSTRUCTION DETAILS
C118-C120	UTILITY DETAILS
C121	BEST MANAGEMENT PRACTICES PLAN
C122	BEST MANAGEMENT PRACTICES DETAILS

SUPPLEMENTAL PLANS

LP101	LANDSCAPE PLAN
LP501	LANDSCAPE DETAILS
LP601	LANDSCAPE NOTES

NO.	DATE	DESCRIPTION	BY
1	03/18/24	REVISED SHEETS C103, C104, & C114 FOR ADDENDUM 1	RTD/89450
2	10/19/23	REVISED SHEETS C107 & C111	RTD/89450
3	10/02/23	REVISED SHEETS C101-C105	BLB/117073

REVISIONS



Call 811 or visit sunshine811.com two full business days before digging to have buried facilities located and marked.
Check positive response codes before you dig!

PROJECT MANAGER	PROJECT ENGINEER	PROJECT DESIGNER
CHRISTOPHER D. JORDAN, P.E. FLORIDA LIC. NO. 58651	DANA E. DRISCOLL, E.I.	RUSSELL DICKENS

RESERVED FOR STATUS AND DATE STAMPS

INDEX NUMBER
2270451002-01C-000CY

LOCAL UTILITY PROVIDERS

DATA AND CABLE PROVIDED BY
COMCAST CABLE COMMUNICATIONS, INC.
LEONARD MAXWELL-NEUBOLD
2601 SW 145TH AVE
MIRAMAR, FL 33027
(754) 221-1254

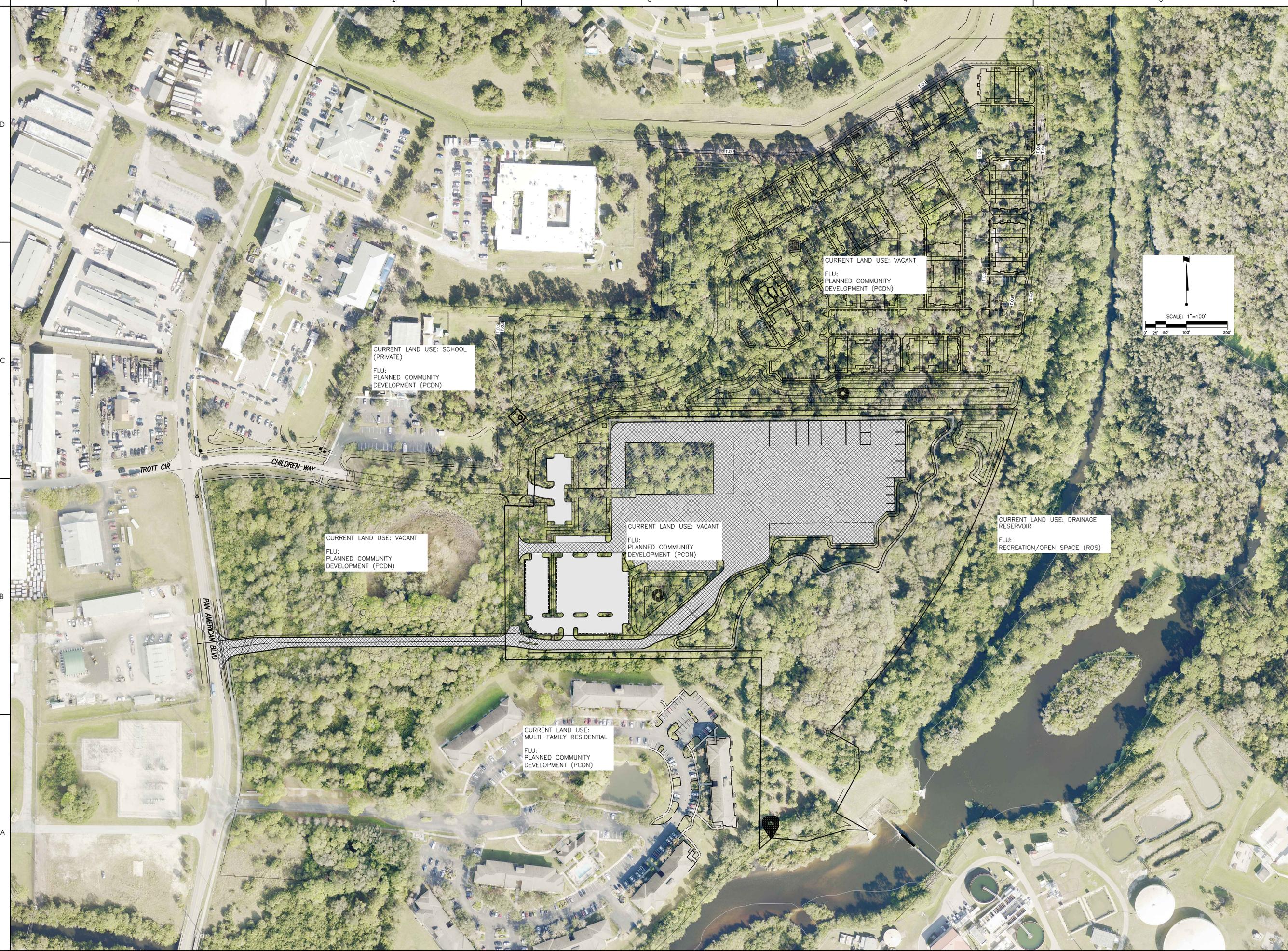
SEWER AND WATER PROVIDED BY
CITY OF NORTH PORT UTILITIES DEPARTMENT
DARRELL SMITH
6644 WEST PRICE BLVD
NORTH PORT, FL, 34291
(941)240-802

ELECTRICAL SERVICE PROVIDED BY
FLORIDA POWER & LIGHT
JOEL BRAY
CONTACT BY PHONE
(386) 586-6403

GAS SERVICE PROVIDED BY
TECO PEOPLES GAS - SARASOTA

JOAN DOMNING
8416 PALM RIVER RD
TAMPA, FL 33619
(813)275-3783

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2024/06/21 11:29:02 AM



Stantec Consulting Services Inc.
5720 Professional Parkway
Atlanta, GA 30328
Tel: (941) 937-6900
www.stantec.com



NOTE:
ELEVATIONS ARE BASED ON THE NAVD-1988
VERTICAL DATUM. ELEVATIONS BASED ON
THE NGVD-1929 VERTICAL DATUM WERE
CONVERTED TO NAVD-1988 BY SUBTRACTING
APPROXIMATELY 1.11 FEET.

Issued/Revision	By	App'd	DATE
A	RFES@STANTEC.COM		10/02/24

Permit/Seal

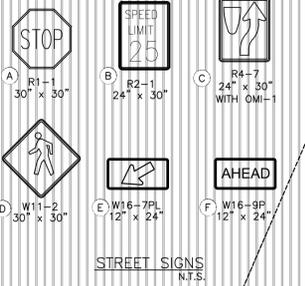
Client/Project
CITY OF NORTH PORT
UTILITIES ENGINEERING
DIVISION
NORTH PORT UTILITIES
ADMINISTRATION AND FIELD
OPERATIONS COMPLEX

Project No.:
File Name: 2270451002-01-C-001A.P
Scale:
RD: CDJ
Dwn: Dign: Chkd: YYYY-MM-DD

Title
AERIAL

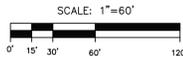
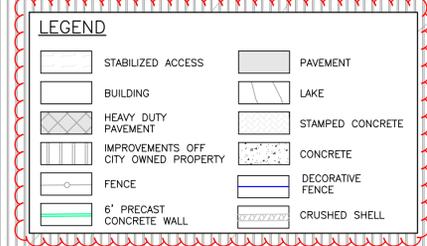
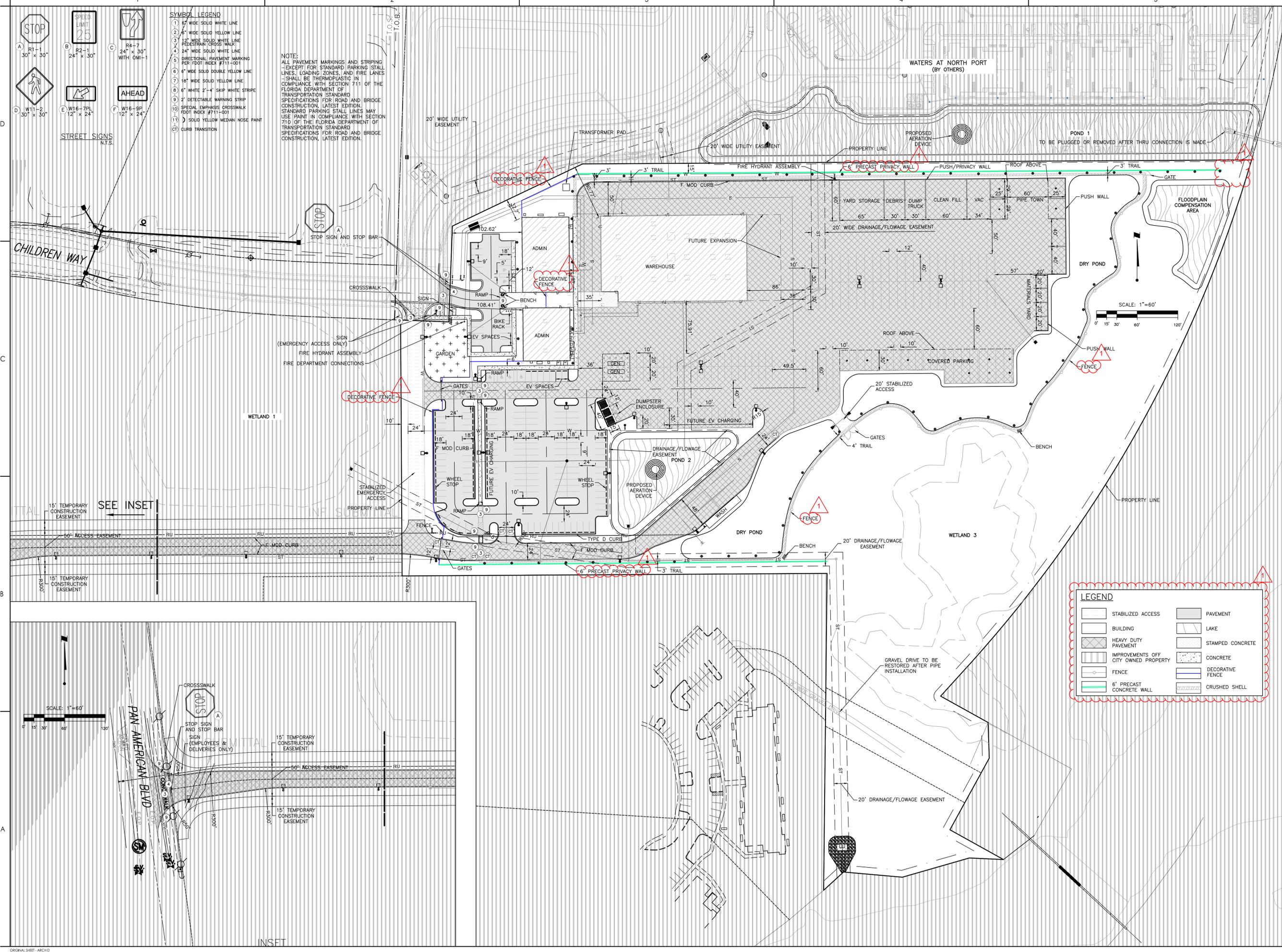
Revision:0
Drawing No.

C102



- SYMBOL LEGEND**
- 6" WIDE SOLID WHITE LINE
 - 6" WIDE SOLID YELLOW LINE
 - 12" WIDE SOLID WHITE LINE
 - 24" WIDE SOLID WHITE LINE
 - DIRECTIONAL PAVEMENT MARKING PER FDOT INDEX #711-001
 - 6" WIDE SOLID DOUBLE YELLOW LINE
 - 18" WIDE SOLID YELLOW LINE
 - 6" WHITE 2'-4" SKIP WHITE STRIPE
 - 2' DETECTABLE WARNING STRIP
 - SPECIAL EMPHASIS CROSSWALK PER FDOT INDEX #711-001
 - SOLID YELLOW MEDIAN NOSE PAINT
 - CURB TRANSITION

NOTE:
 ALL PAVEMENT MARKINGS AND STRIPING - EXCEPT FOR STANDARD PARKING STALL LINES, LOADING ZONES, AND FIRE LANES - SHALL BE THERMOPLASTIC IN COMPLIANCE WITH SECTION 711 OF THE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION. STANDARD PARKING STALL LINES MAY USE PAINT IN COMPLIANCE WITH SECTION 710 OF THE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.



NOTE:
 ELEVATIONS ARE BASED ON THE NAVD-1988 VERTICAL DATUM. ELEVATIONS BASED ON THE NGVD-1929 VERTICAL DATUM WERE CONVERTED TO NAVD-1988 BY SUBTRACTING APPROXIMATELY 1.11 FEET.

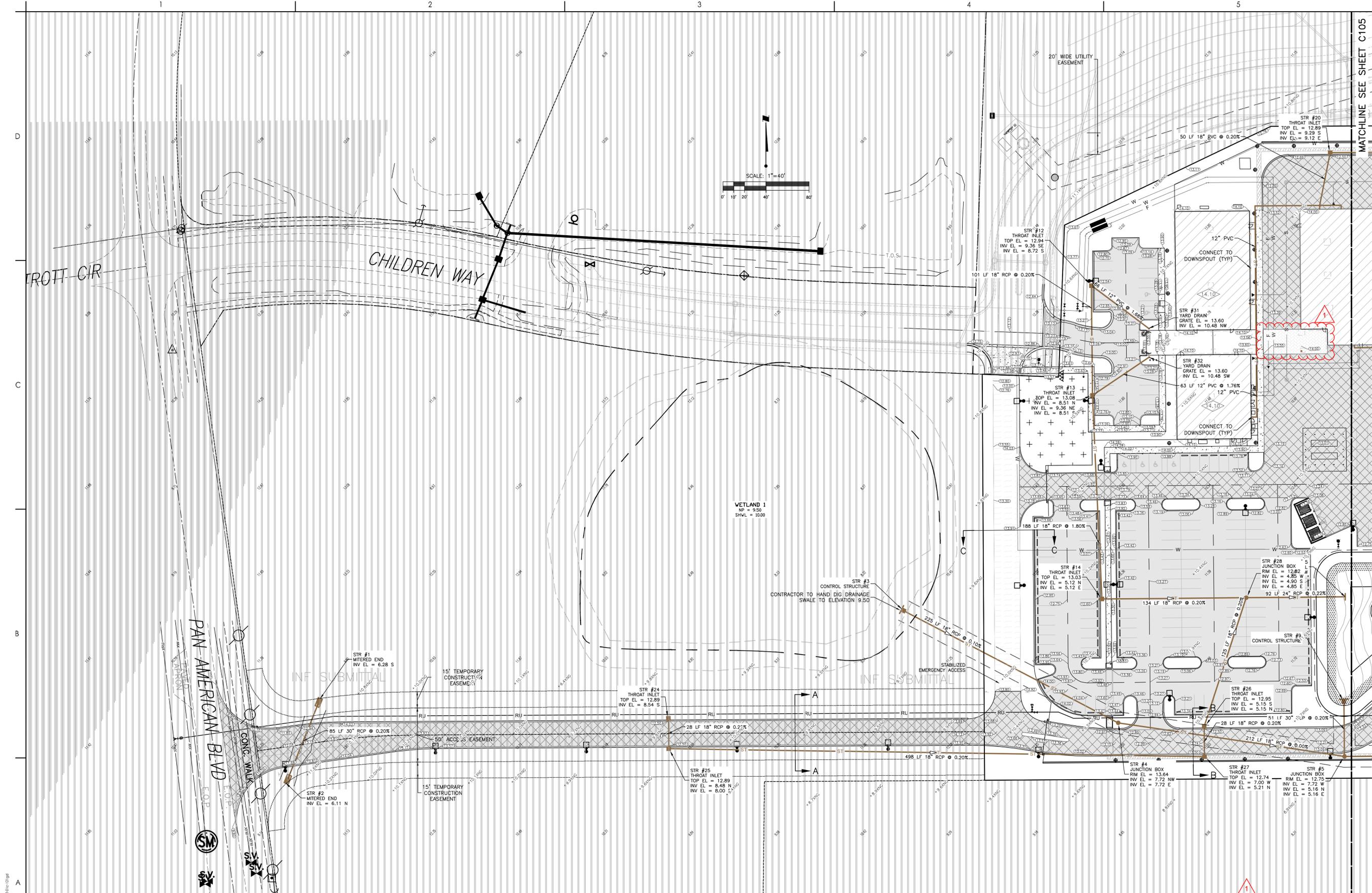
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ISSUED FOR	RD/BR/ASO	BY	APPD

Permit/Seal

Client/Project
 CITY OF NORTH PORT
 UTILITIES ENGINEERING
 DIVISION
 NORTH PORT UTILITIES
 ADMINISTRATION AND FIELD
 OPERATIONS COMPLEX

Project No.:
 File Name: 2270451002-01-C-1015P
 Scale:
 RTD CDJ
 Dwn. Dgn. Crkd. YYYY.MM.DD

Title
SITE PLAN
 Revision:0
 Drawing No.
C103



NOTE:
 ELEVATIONS ARE BASED ON THE NAVD-1988
 VERTICAL DATUM. ELEVATIONS BASED ON
 THE NGVD-1929 VERTICAL DATUM WERE
 CONVERTED TO NAVD-1988 BY SUBTRACTING
 APPROXIMATELY 1.11 FEET.

APP'D	DATE	BY	REVISION
	03/18/24	YTTY/MM/DD	

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Client/Project:
 CITY OF NORTH PORT
 UTILITIES ENGINEERING
 DIVISION
 NORTH PORT UTILITIES
 ADMINISTRATION AND FIELD
 OPERATIONS COMPLEX

Project No.:
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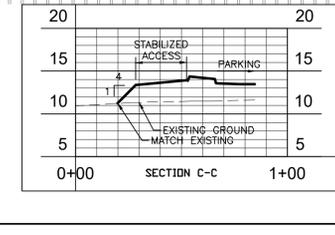
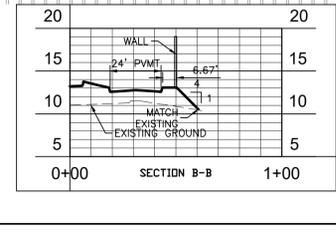
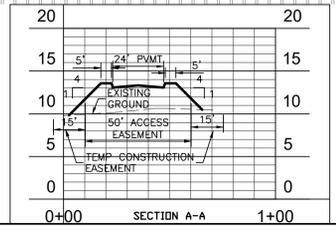
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 Design: CDJ
 Check: YTTY/MM/DD

Title:
 GRADING AND
 DRAINAGE PLAN

Revision:0
 Drawing No.

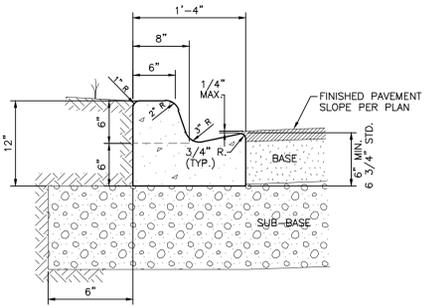
C104

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LEGEND

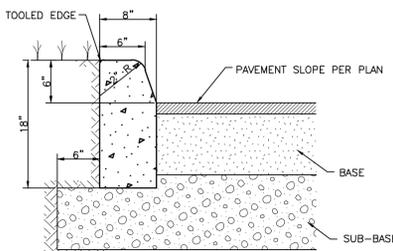
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[Symbol]	BUILDING	[Symbol]	LAKE
[Symbol]	HEAVY DUTY PAVEMENT	[Symbol]	STAMPED CONCRETE
[Symbol]	IMPROVEMENTS OFF CITY OWNED PROPERTY	[Symbol]	CONCRETE
[Symbol]	CRUSHED SHELL		



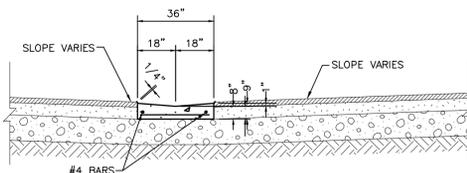
CURB NOTES:

1. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3,000 P.S.I. IN 28 DAYS UNLESS OTHERWISE NOTED.
2. WHEN USED ON THE HIGH SIDE OF THE ROADWAYS THE CROSS SLOPE OF THE GUTTER SHALL MATCH THE CROSS SLOPE OF THE ADJACENT PAVEMENT.
3. AN EXPANSION JOINT WILL BE PLACED AT THE END OF ALL RETURNS AT INTERVALS NOT TO EXCEED 50'. CONTRACTION JOINTS AT A MAXIMUM SPACING OF 10' SHALL BE SAW CUT AT DEPTH PER FDOT INDEX NO. 300
4. EXPANSION JOINTS SHALL BE CONSTRUCTED WITH 1/2" BITUMINOUS IMPREGNATED EXPANSION JOINT MATERIAL.

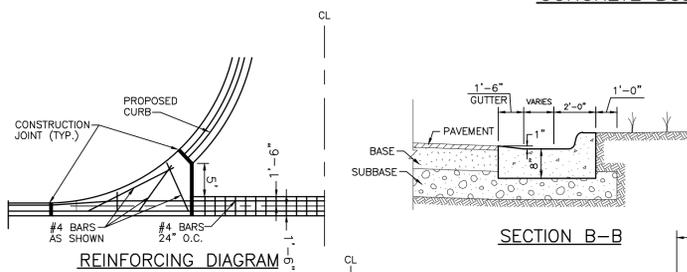
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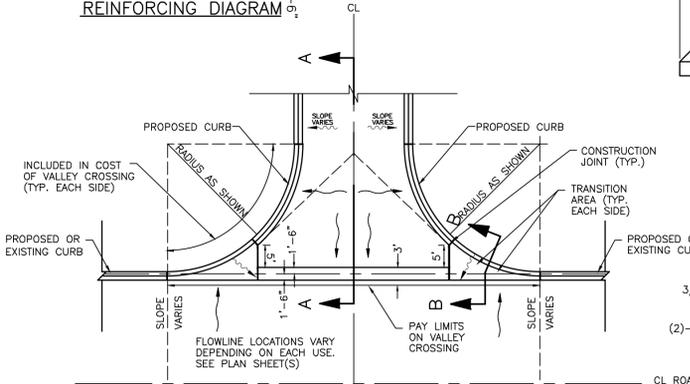
TYPE "D" CURB
S-P002 N.T.S.



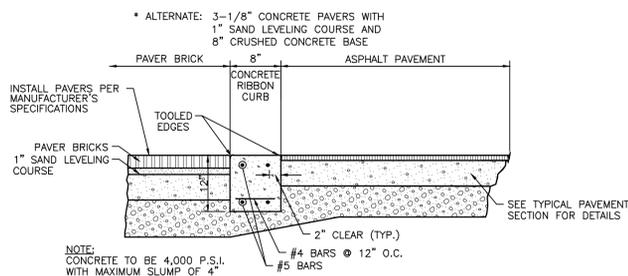
CONCRETE BOLLARD AND HANDICAP SIGN DETAIL
N.T.S.



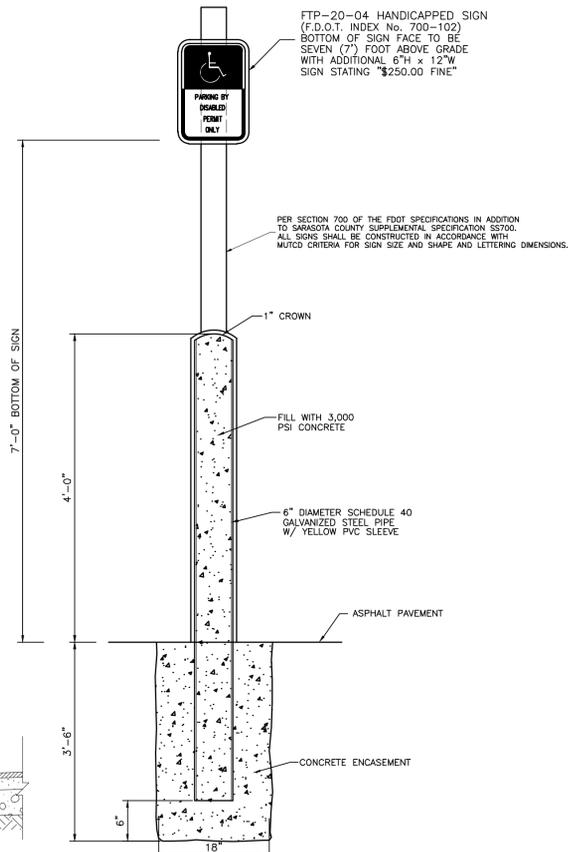
REINFORCING DIAGRAM



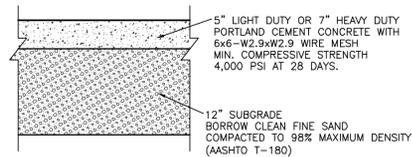
VALLEY CROSSING DETAIL
S-P013 (12/13/01) N.T.S.



CONCRETE RIBBON CURB/INTERFACE DETAIL
S-P067 (01/20/11 MANATEE COUNTY) N.T.S.



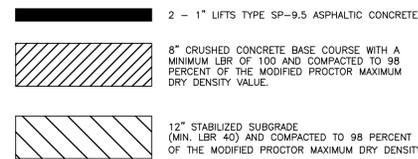
PRECAST CONCRETE WHEEL STOP
S-P029 N.T.S.



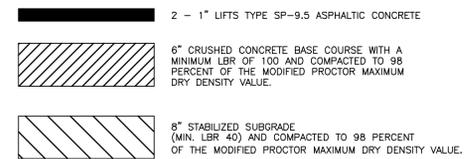
NOTES:

1. SUBGRADE SOILS SHOULD BE DENSIFIED TO AT LEAST 98% OF MODIFIED PROCTOR TEST MAXIMUM DRY DENSITY (ASTM D1557, AASHTO T-180) TO A DEPTH OF AT LEAST 2 FEET PRIOR TO PLACEMENT OF CONCRETE.
2. THE SURFACE OF THE SUBGRADE SOILS SHOULD BE SMOOTH, AND ANY DISTURBANCES OR WHEEL RITTING CORRECTED PRIOR TO PLACEMENT OF CONCRETE.
3. THE SUBGRADE SOILS SHOULD BE MOISTENED PRIOR TO PLACEMENT OF CONCRETE.
4. CONCRETE PAVEMENT THICKNESS SHOULD BE UNIFORM THROUGHOUT.
5. SEE SITE PLAN FOR CONCRETE PAVEMENT LOCATIONS.
6. ALL CONCRETE AREAS SHALL NOT EXCEED 2% CROSS SLOPE IN ACCORDANCE WITH THE AMERICAN WITH DISABILITIES ACT (ADA).
7. THE RIGID PAVEMENT SHALL BE DOWELED IN ACCORDANCE WITH FOOT STANDARD INDEX #305.
8. CONTRACTION JOINTS SHALL BE SAW CUT TO A 1 1/2" DEPTH AT 10 TO 12 FOOT MAXIMUM INTERVALS, SQUARE IN EACH DIRECTION. SEE HARDSCAPE PLANS FOR JOINT LOCATIONS.
9. AN EXPANSION JOINT WILL BE PLACED EVERY 50 FEET AND CONSTRUCTED WITH 1/2" PREFORMED JOINT FILLER. SEE HARDSCAPE PLANS FOR JOINT LOCATIONS.

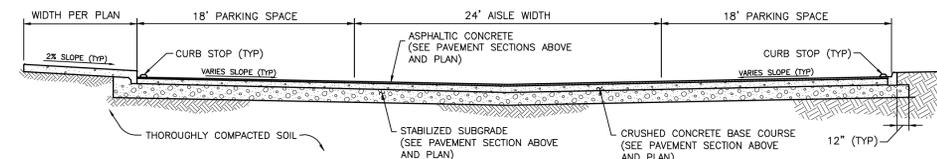
PORTLAND CEMENT CONCRETE RIGID PAVEMENT SECTION
N.T.S.



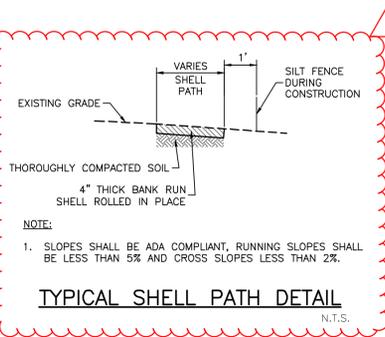
HEAVY DUTY PAVEMENT SECTION
N.T.S.



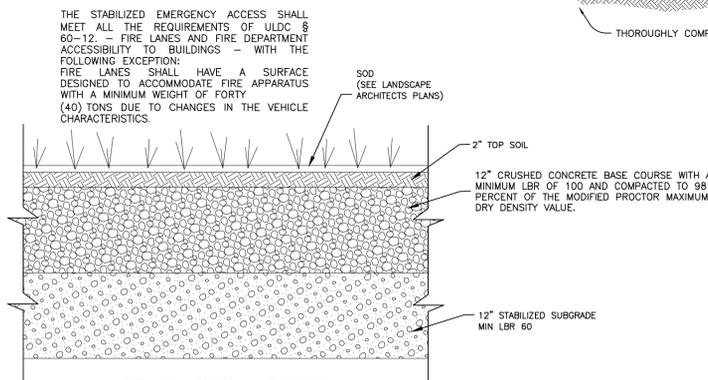
REGULAR PAVEMENT SECTION
N.T.S.



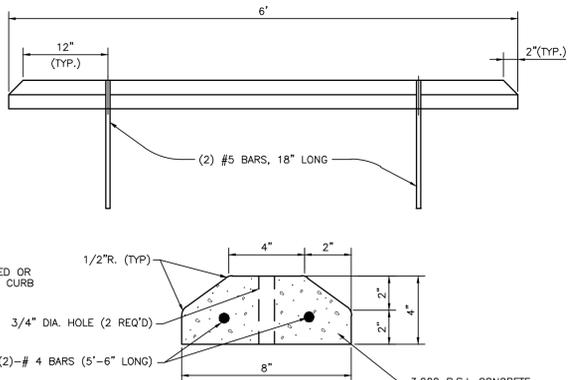
TYPICAL PAVEMENT SECTION
N.T.S.



TYPICAL SHELL PATH DETAIL
N.T.S.

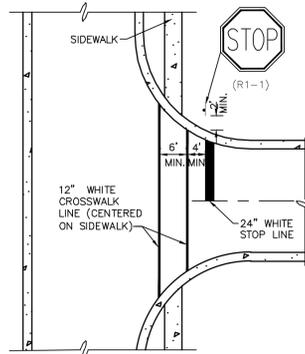


STABILIZED ACCESS
N.T.S.

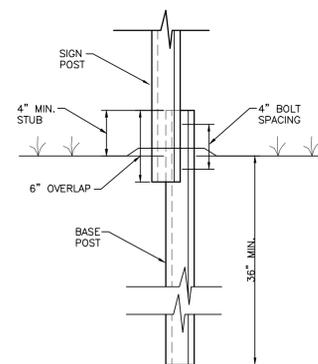
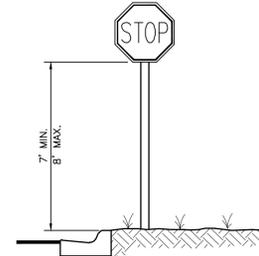


TYPICAL PARKING SPACE
S-P029(12/07/04) SARASOTA N.T.S.

STOP SIGN, STOP LINE AND CROSSWALK LOCATION DETAIL
S-P037 (09/07/04) N.T.S.



TYPICAL STOP SIGN DETAIL
N.T.S.



SIGN POST BREAKAWAY DETAIL
S-P027 N.T.S.

NOTE: ELEVATIONS ARE BASED ON THE NAVD-1988 VERTICAL DATUM. ELEVATIONS BASED ON THE NGVD-1929 VERTICAL DATUM WERE CONVERTED TO NAVD-1988 BY SUBTRACTING APPROXIMATELY 1.11 FEET.

031 B/2X	App'd	YTY MM/DD
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03000001	Issue/Revision	

Permit/Seal

Client/Project
CITY OF NORTH PORT
UTILITIES ENGINEERING
DIVISION
NORTH PORT UTILITIES
ADMINISTRATION AND FIELD
OPERATIONS COMPLEX

Project No.:
File Name: 2270451002.01C-501FD
Scale:
RD CDJ
Dwn. Dgn. Ck'd. YTY MM/DD

Title
PAVING AND
GRADING DETAILS

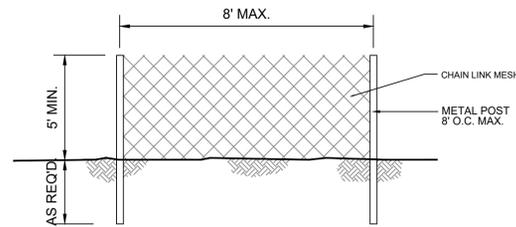
Revision:
Drawing No.

C114



Stantec Consulting Services Inc.
5720 Professional Parkway
Suite 3000, 8th Fl.
Tampa, FL 33609, USA
Tel: (941) 907-6900
www.stantec.com

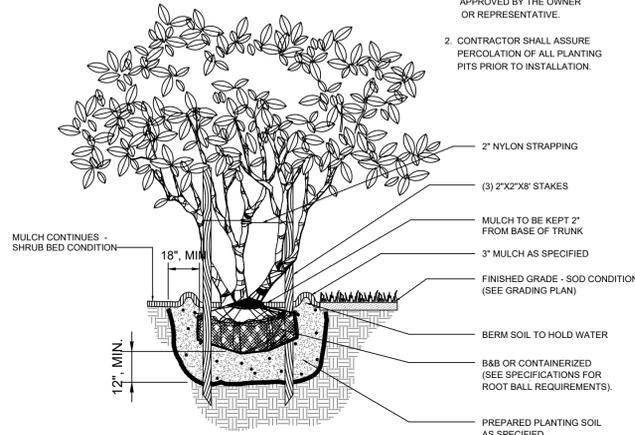




NOTE: BARRICADES TO BE INSTALLED AT THE DRIP-LINE OF ANY TREE TO REMAIN WITHIN THE AREA OF DEVELOPMENT OR AS DELINEATED ON THE FINAL SITE PLAN.

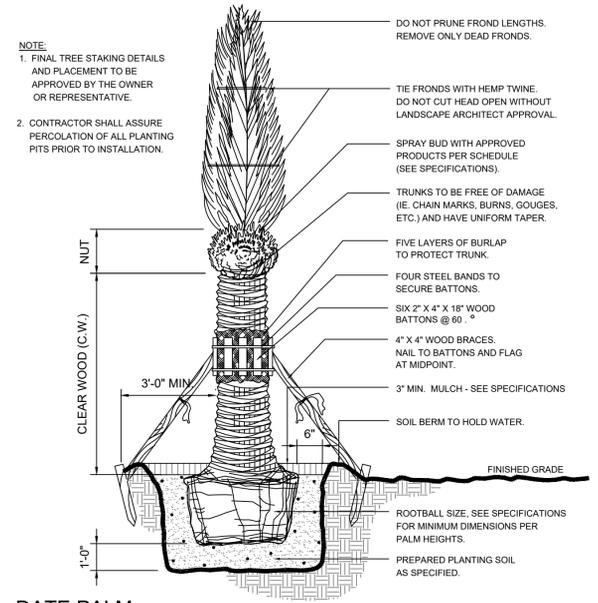
TYPICAL TREE BARRICADE DETAIL

1 SCALE: nts



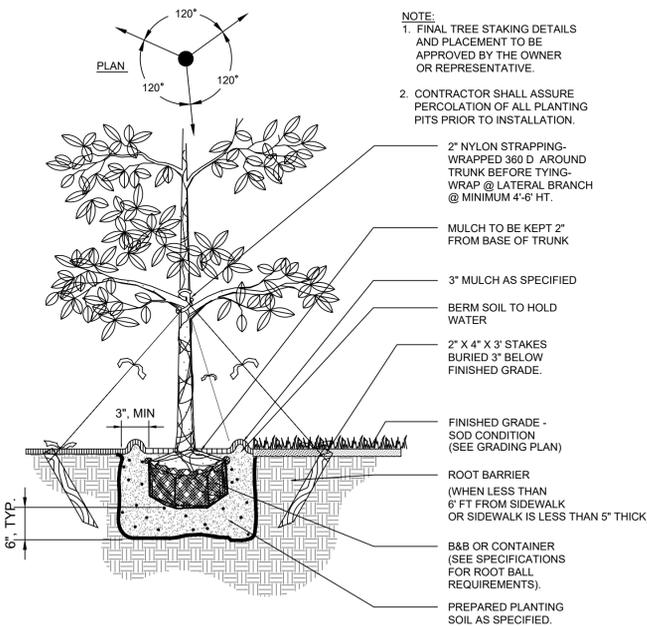
MULTI-TRUNK TREE

2 SCALE: nts



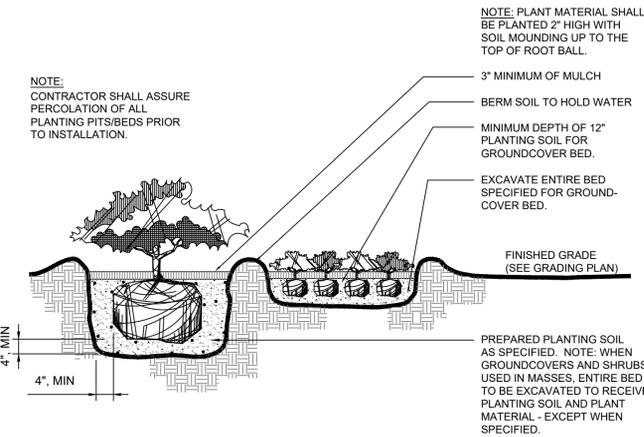
DATE PALM

3 SCALE: N.T.S.



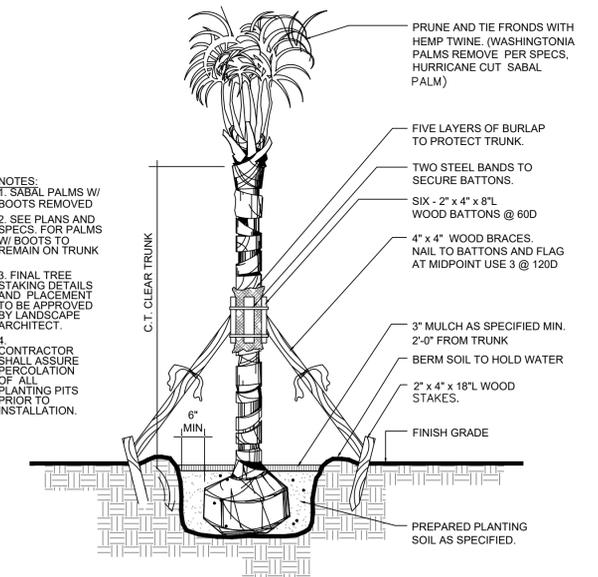
CANOPY TREE PLANTING DETAIL

4 SCALE: nts



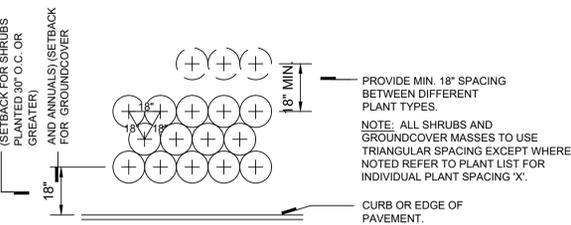
SHRUB AND GROUNDCOVER PLANTING DETAIL

5 SCALE: nts



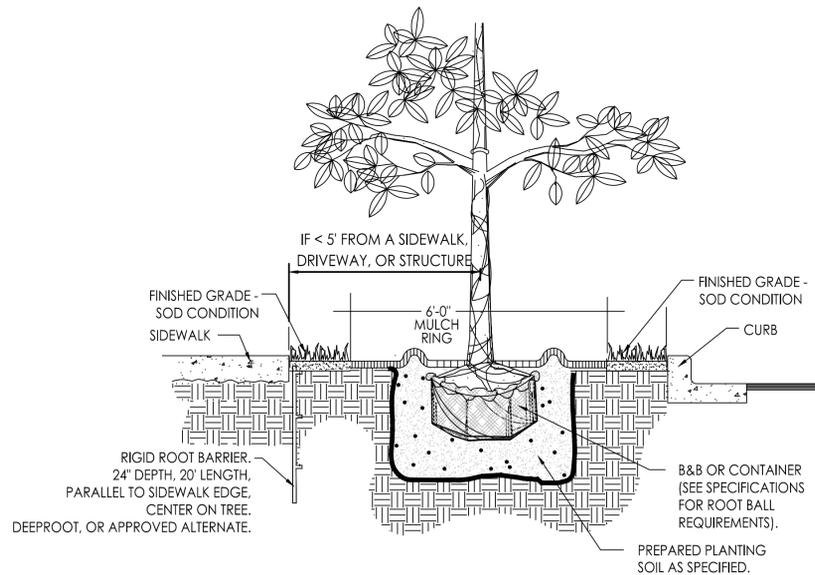
CABBAGE PALM

6 SCALE: N.T.S.



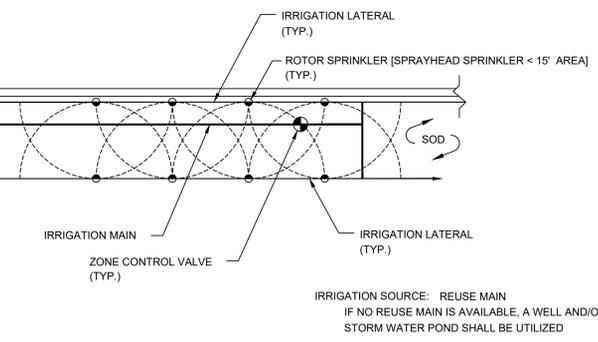
GROUNDCOVER SPACING PLAN DETAIL

7 SCALE: NTS



STREET TREE PLANTING DETAIL

8 SCALE: nts



TYPICAL IRRIGATION PLAN DETAIL

9 SCALE: nts

TIERRA

February 10, 2023 (Revised April 25, 2023)

Stantec
6920 Professional Way
Sarasota, Florida 34240

Attention: Mr. Chris Jordan

**RE: Geotechnical Engineering Services Report
Utility Administration and Warehouse Facility
City of North Port, Florida
Tierra Project No.: 6511-19-254**

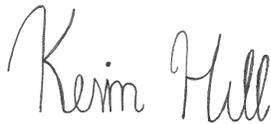
Mr. Jordan:

Tierra, Inc. (Tierra) has completed geotechnical engineering services for the above referenced project. The results of our field exploration program and subsequent geotechnical recommendations are presented in this report.

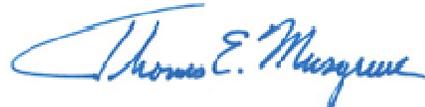
Tierra appreciates the opportunity to be of service to Stantec Consulting Services, Inc. on this project. We look forward to working with you on future projects. If you have any questions or comments regarding this report, please contact Tierra at your earliest convenience.

Respectfully Submitted,

TIERRA, INC.



Kevin L. Hill, E.I.
Geotechnical Engineering Intern



Thomas E. Musgrave, P.E.
Geotechnical Engineer
Florida License No. 81669

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PROJECT DESCRIPTION

Project Information

The project is located within the City of North Port in Sarasota County, Florida. The project, as we understand it, consists of the preparation of construction plans for a proposed new public utility administration and warehouse facility. Based on information provided by Stantec, it is our understanding the current design phase consists of developing plans for proposed pond/drainage areas, pavement sections, and a new building structure for the proposed new public utility administration and warehouse facility. This report addresses the evaluation of existing subsurface soil conditions with regards to the proposed drainage facilities, building structure, and pavement sections.

Structural loads for the proposed building were not available for preparation of this report. Tierra anticipates that the maximum column and wall loads will not exceed 50 kips and 5 kips per linear foot, respectively. If the loading conditions for the proposed structure exceed these anticipated loads, then Tierra should be given the opportunity to review the final design information and amend the recommendations herein, if warranted.

Scope of Services

The objective of our study was to obtain information concerning subsurface conditions at the site in order to base engineering estimates and recommendations in each of the following areas:

1. General location and description of potentially deleterious materials discovered in the borings which may interfere with the construction progress or proposed structure and pavement performance, including existing fills, debris, or surficial organics.
2. General suitability of materials encountered within the borings for use as general backfill.
3. Feasibility of utilizing the insitu soils for support of the proposed structure using shallow foundations. Suitability of insitu soils for support of slab-on-grade.
4. Design parameters required for the foundation systems, including allowable bearing pressures, foundation sizes, foundation levels and soil subgrade recommendations.
5. Identification of groundwater levels and estimation of Seasonal High Groundwater Table (SHGWT).
6. General pavement section design and construction considerations.

In order to meet the preceding objectives, we provided the following services:

1. Conducted a visual site reconnaissance of the project site and coordinated utility clearance via Sunshine One-Call.
2. Performed twenty-one (21) hand auger borings to depths ranging from approximately 2½ to 6½ feet below ground surface in areas of proposed drainage pond and pavement sections.
3. Performed three (3) Standard Penetration Test (SPT) borings to a depth of approximately 20 feet below existing grades within the anticipated footprints of the proposed drainage

ponds. Performed eight (8) SPT borings to a depth of approximately 30 feet below existing grades within the anticipated footprints of the proposed building structures.

4. Performed two (2) field permeability tests at test depths of approximately 1 foot to 2½ feet below existing grades.
5. Identified groundwater table levels and estimated the SHGWT level for the project.
6. Conduct laboratory testing on selected soil samples obtained from within the borings.
7. Visually classified and stratified all recovered soil samples in the laboratory using the Unified Soil Classification System (USCS).
8. Prepared this engineering report which summarizes the course of study pursued, the field and laboratory data generated, the subsurface conditions encountered and our recommendations including general pavement and construction considerations.

The scope of our services did not include an environmental assessment for determining the presence or absence of wetlands or hazardous or toxic materials in the soil, bedrock, groundwater, or air, on or below or around this site. The scope of our services did not include evaluation for sinkhole potential. Any statements in this report or on the boring logs regarding odors, colors, unusual or suspicious items or conditions are strictly for the information of our client.

SITE AND SUBSURFACE CONDITIONS

USGS Quadrangle Map

Based on the “Murdock, Florida” United States Geological Survey (USGS) Quadrangle Map, ground elevations at the project site range from approximately +5 to +10 feet National Geodetic Vertical Datum of 1929 (NGVD 29).

USDA Soil Survey

Soil data published by the USDA Soil Survey of Sarasota County, Florida was reviewed as part of the subsurface investigation. This information indicates that there are three (3) primary mapping units within the vicinity of the proposed project site. The following paragraphs and table provide a brief description of the soil units as presented in the Soil Survey.

EauGallie and Myakka fine sands, 0 to 2 percent slopes (Map Unit 10) - The EauGallie component makes up 45 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded, nor ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October, and November. Organic matter content in the surface horizon is about 3 percent.

Holopaw fine sand, frequently ponded, 0 to 1 percent slopes (Map Unit 22) - The Holopaw component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded, but it is frequently ponded. A seasonal zone of water saturation is at 0 inches during July, August, September, and October. Organic matter content in the surface horizon is about 3 percent.

Pomello fine sand, 0 to 2 percent slopes (Map Unit 33) - The Pomello component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded, nor ponded. A seasonal zone of water saturation is at 30 inches during June, July, August, September, October, and November. Organic matter content in the surface horizon is about 1 percent.

It should be noted that information contained in the USDA/NRCS Web Soil Survey may not be reflective of current subsurface conditions, particularly if recent development in the project vicinity has modified existing soils or surface/subsurface drainage.

Summary of USDA Soil Survey Sarasota County, Florida								
USDA Map Symbol and Soil Name		Soil Classification				pH	Seasonal High Water Table	
		Depth (in)	USCS	AASHTO	Permeability (in/hr)		Depth (feet)	Months
10	Eaugallie Myakka	0-6	SP-SM, SM	A-2-4, A-3	6.0 - 20.0	4.5-6.0	0.5-1.5	Jun-Nov
		6-22	SP-SM, SM	A-2-4, A-3	6.0 - 20.0	4.5-6.0		
		22-44	SP-SM, SM	A-2-4, A-3	0.6 - 2.0	4.5-7.3		
		44-48	SP-SM, SM	A-2-4, A-3	6.0 - 20.0	4.5-7.8		
		48-66	SC-SM, CL, SC	A-2-4, A-4, A-7-6	0.1 - 0.6	4.5-7.8		
		66-80	SM	A-2-4, A-4	0.6 - 2.0	4.5-7.8		
		0-6	SP-SM, SM	A-2-4, A-3	6.0 - 20.0	3.5-6.5	0.5-1.5	Jun-Nov
		6-24	SP-SM, SM	A-2-4, A-3	6.0 - 20.0	3.5-6.5		
		24-42	SP-SM, SM	A-2-4, A-3	2.0 - 6.0	3.5-6.5		
		42-60	SP-SM, SM	A-2-4, A-3	6.0 - 20.0	3.5-6.5		
60-80	SP-SM, SM	A-2-4, A-3	6.0 - 20.0	3.5-6.5				
22	Holopaw	0-4	SP-SM, SM	A-2-4, A-3	6.0 - 20.0	5.5-7.3	+2.0-0.0	Jul-Oct
		4-50	SP-SM, SM	A-2-4, A-3	6.0 - 20.0	5.5-7.3		
		50-66	SC-SM, SC	A-2-4, A-4, A-6	2.0 - 6.0	5.5-8.4		
		66-80	SC-SM, SM	A-2-4	6.0 - 20.0	5.5-8.4		
		0-4	SP-SM, SM	A-2-4, A-3	20.0 - 20.0	4.5-6.0		
4-42	SP-SM, SM	A-2-4, A-3	20.0 - 20.0	4.5-6.0				
42-54	SP-SM, SM	A-2-4, A-3	2.0 - 6.0	4.5-6.0				
54-80	SP-SM, SM	A-2-4, A-3	6.0 - 20.0	4.5-6.0				

Subsurface Conditions

The subsurface conditions were explored using a total of eleven (11) Standard Penetration Test (SPT) borings performed to depths ranging from approximately 20 to 30 feet below the ground surface. In addition, a total of twenty-one (21) hand auger borings were performed to depths ranging from approximately 2½ to 6½ feet below the ground surface at the project site. The boring/test locations were staked in the field by representatives of Tierra using Garmin Etrex®

hand-held Global Positioning System (GPS) equipment with a reported accuracy of ± 10 feet. The approximate boring/test locations are presented on the attached **Boring Location Plan** in the **Appendix**.

The hand auger borings were performed by manually twisting and advancing a bucket auger into the ground, typically in 6-inch increments. The SPT borings were performed with the use of a drill rig equipped with an automatic hammer, using mud-rotary drilling procedures. The soil sampling was performed in general accordance with the American Society for Testing and Materials (ASTM) Test Designation D-1586. SPT resistance N-values were then taken continuously to a depth of 10 feet and at intervals of 5 feet thereafter. As each soil type was encountered samples were collected and visually classified in the field. The samples were then transported to our Tampa laboratory for verification of the visual classification and testing.

The soil strata encountered in the borings performed at the project site are summarized in the following table.

Stratum Number	Soil Description	Unified Soil Classification System Symbol
1	Gray to Brown Sand to Sand with Silt	SP/SP-SM
2	Gray to Brown Silty Sand to Clayey – Silty Sand	SM/ SC-SM
3	Gray to Brown Clayey Sand	SC
4	Dark Gray to Brown Sand to Sand with Silt to Silty Sand with Organics	PT
5	Calcareous Clay to Weathered Limestone	---(1)
(1) USCS does not include nomenclature for Limestone		

The subsurface soil stratification is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The **Soils Profiles** sheets in the **Appendix** should be reviewed for specific information at individual boring locations. These profiles include soil descriptions, stratifications and penetration resistances. The stratifications shown on the boring profiles represent the conditions only at the actual boring location. Variations may occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual.

Groundwater Information

At the time of our field activities, the groundwater was encountered at depths ranging from approximately 1 foot to 4 feet below existing grades. These levels are illustrated on the **Soil Profiles** sheets in the **Appendix**. Groundwater conditions will vary with environmental variations and seasonal conditions, such as the frequency and magnitude of rainfall patterns, as well as man-made influences (i.e. existing swales, drainage ponds, underdrains and areas of covered soils, such as paved parking lots).

Based upon the results of our borings, the seasonal high groundwater table (SHGWT) is estimated to occur at depths ranging from at or above the ground surface to approximately 2 feet below existing grades. The estimated SHGWT levels at the boring locations are depicted adjacent to the soil profiles in the **Appendix**. As previously noted, the locations of our borings were based on our hand-held GPS devices and should be considered approximate. If the SHGWT levels are determined to be critical to design, Tierra recommends the locations of our borings be survey located.

EVALUATION AND RECOMMENDATIONS

General

Based on our understanding of the anticipated loading conditions previously stated herein and that finished site grades are anticipated to be within 2 feet of existing grades for the proposed structure, the foundations and floor slab may bear on imported approved fill or on the existing sandy soils encountered in the borings when improved according to our recommendations. The boring results generally indicate that the sandy soils will provide adequate support for lightly loaded shallow foundation systems when prepared in accordance with the recommendations provided herein.

The building pad area for the proposed structure will require proper site preparation before development. Our recommendations for site preparation, foundation design criteria, settlement, floor slabs and construction considerations are presented in the following report sections.

It should be noted that if final design loads or final foundation criteria deviates from what is stated in this report, Tierra should be given the opportunity to review the new information and amend our recommendations, if necessary.

On Site Soil Suitability

The suitability of soils for reuse in construction should be evaluated against the project engineering fill requirements. Variations in the subsurface stratification should be expected between borings. All fill should be placed in accordance with current Sarasota County Specifications.

In general, the soils of Stratum 1 (SP/SP-SM) may be moved and used for grading purposes, site leveling, general engineering fill, structural fill and backfill in other areas, provided the fill is free of organic materials, clay, debris or any other material deemed unsuitable for construction and evaluated against engineering fill requirements. The appropriate Sarasota County Specifications should be consulted to determine the specific use/suitability of the soil types encountered during construction.

Stratum 2 soils (SM) may be moved and used for grading purposes, site leveling, general engineering fill, structural fill and backfill in other areas, provided the fill is free of organic materials, clay, debris or any other material deemed unsuitable for construction and evaluated against engineering fill requirements. It should be noted that Stratum 2 soils may be difficult to dry and compact due to their fines content. Stratum 2 soils should only be placed above the groundwater level at the time of construction.

Stratum 3 (SC) is not recommended for use as fill materials due to their plastic nature.

Organic material (Stratum 4) was encountered within some of the borings performed at the site. Laboratory test results indicate the organic content within Stratum 4 ranges from 5 to 6 percent. This material is classified as organic and is deleterious to the proposed construction.

Hydraulic Conductivity

Two (2) field permeability tests constant head, open-end pipe hydraulic conductivity tests (as described in the FDOT Soils and Foundation Handbook) were performed in the vicinity of the proposed pond areas.

No reduction, limiting value, or factors of safety have been applied to these rates. The project drainage engineer should apply an appropriate factor of safety for design and evaluation purposes. Geotechnical parameters related to pond design are provided on the **Summary of Geotechnical Parameters for Ponds** table in the **Appendix**. It is important to note that the results provided are the measured hydraulic conductivity rates of the in-situ soil conditions encountered at the time of our field activities and are applicable to the Stratum 1 soils.

Site Preparation

Prior to construction, the location of any existing underground utilities within the construction area should be established. Material suitable for re-use may be stockpiled; however, any material stockpiled for re-use shall be tested for conformance to material specifications as indicated in the following sections of this report. Provisions should then be made to relocate any interfering utility lines within the construction area to appropriate locations and backfilling the resulting excavations with compacted structural fill. In this regard, it should be noted that if abandoned underground pipes are not properly removed or plugged, they might serve as conduits for subsurface erosion, which subsequently may result in excessive settlement.

Clearing operations ought to remove all deleterious materials from the proposed development area to a minimum depth of 6 feet. As a minimum, it is recommended that the clearing operations extend to the depth needed to remove material considered deleterious at least 5 feet beyond the proposed development area. Deleterious materials to be removed include roots, organics, tree stumps or other buried or surface debris. Fill placement and subgrade preparation recommendations are presented in the "Construction Considerations" Section of this report.

Foundation Recommendations

Based on the anticipated construction and loading conditions, field results indicate shallow foundations may be designed for a net maximum allowable bearing pressure of 2,000 psf once deleterious materials have been removed. The foundations and floor slab should bear on properly placed and compacted cohesionless (sand) structural fill. The existing near surface sandy soils should be improved by compaction after clearing operations to improve foundation support and reduce total and differential settlement. Compaction criteria are presented under the "Construction Considerations" Section of this report.

All footings should be embedded so that the bottoms of the foundations are a minimum of 18 inches below adjacent compacted grades on all sides. Strip or wall footings should be a minimum of 24 inches wide and pad or column footings should be a minimum of 30 inches wide. The minimum

footing sizes should be used regardless of whether or not the foundation loads and allowable bearing pressures dictate a smaller size. These minimum footing sizes tend to provide adequate bearing area to develop bearing capacity and account for minor variations in the bearing materials. All footings should be constructed in a dry fashion. All footing excavations should be covered due to rain events. Uncovered excavations may become oversaturated and difficult to compact during rain events. Surface run-off water should be drained away from the excavations and not allowed to pond. It is important that the structural elements be centered on the footings such that the load is transferred evenly unless the footings are proportioned for eccentric loads.

Settlement

The settlement of shallow foundations supported on compacted sand should occur rapidly after loading. Thus, the expected settlement should occur during construction as dead loads are imposed. Provided the recommended site preparation operations are properly performed and the recommendations previously stated are utilized, the total settlement of wall and isolated column footings should not exceed approximately 1 inch. Differential settlement is estimated to be on the order of one-half of the total settlement. Differential settlement of this magnitude is usually considered tolerable for the anticipated construction; however, the tolerance of the proposed structure to the predicted total and differential settlement should be confirmed by the structural engineer. If final loading conditions differ from the loads discussed above, Tierra should be given the opportunity to review and amend (if necessary) our recommendations.

Floor Slab

The proposed floor slabs may be safely supported as a slab-on-grade provided any unsuitable materials are removed and replaced with approved fill. It is also recommended that the floor slab bearing soils be covered by lapped polyethylene sheeting in order to minimize the potential for floor dampness which can affect the performance of various flooring materials. This membrane should consist of a minimum six (6) mil single layer of non-corroding, non-deteriorating sheeting material placed to minimize seams and to cover all of the soil below the building floor. This membrane should be cut in a cross shape for pipes or other penetrations; the membrane should extend to within one-half inch of all pipes or other penetrations. All seams of the membrane should be lapped at least 12 inches. Punctures or tears in the membrane should be repaired with the same or comparable material.

Pavement Considerations

Actual pavement section thickness should be provided by the design civil engineer based on traffic loads, volume, and the owners design life requirements. The following sections represent minimum thicknesses representative of typical load and construction practices and as such periodic maintenance should be anticipated. All pavement materials and construction procedures should conform to Sarasota County requirements.

In general, following the completion of the recommended clearing and grading operations and fill placement, the compacted fill and natural sandy soils should be acceptable for construction and support of a flexible (limerock, crushed concrete, or shell base) type pavement section.

Any fill utilized to elevate the cleared pavement areas to subgrade elevation should consist of reasonably clean (maximum 12% passing #200 sieve sizes) sands uniformly compacted to a

minimum depth of 12 inches to a minimum density of 95% of the Modified Proctor maximum dry density. In flexible pavement areas we recommend 12 inches of Type B stabilized subgrade (LBR = 40%) below the base course compacted to a minimum of 98% of the Modified Proctor maximum dry density. Traffic should not be allowed on the subgrade as the base is placed to avoid rutting. The subgrade should be checked for soundness and be true to line and grade prior to the placement of the base course.

The choice of pavement base type will depend on final pavement grades in relation to the seasonal high groundwater levels presented in this report. If a minimum separation of 18 inches between the bottom of the base and the seasonal high groundwater level is obtained, then a limerock, shell, or crushed concrete base can be utilized. A crushed concrete base should be utilized if the separation between final grade and the seasonal high groundwater is a minimum of 12 inches and less than 18 inches. Base material elevations should not be designed for saturated conditions. If the designer wishes to have base material closer than 12 inches to the SHGWT, then an underdrain system should be utilized that will maintain the 12 inches of separation. The SHGWT should be re-established relative to a known elevation prior to setting final grades. Limerock, shell and crushed concrete base material should meet Florida Department of Transportation (FDOT) requirements including compaction to a minimum density of 98% of the Modified Proctor maximum dry density and a minimum Limerock Bearing Ratio (LBR) of 100%. Crushed concrete should be graded in accordance with FDOT Standard Specifications. As a guideline for pavement design, we recommend that the base course be a minimum of 6 inches thick in parking areas and 8 inches thick in heavily traveled drives. Before paving, the base should be checked for soundness.

The asphaltic concrete structural course should consist of at least one and one-half (1½) inches of Type SP asphaltic concrete material for light-duty applications. The asphaltic concrete should meet standard FDOT material requirements and placement procedures as outlined in the current FDOT Standard Specifications.

As an alternate to the above referenced flexible pavement design, a rigid (concrete) pavement design could be used. The concrete should have a minimum compressive strength of 4,000 psi at 28 days when tested in accordance with ASTM C-39. Based on our experience, a minimum thickness of six (6) inches should be utilized for the anticipated heavy-duty applications. The steel reinforcement within the concrete pavement should be designed by the project civil engineer. The subgrade soils should be compacted to a minimum density of 95% of the Modified Proctor maximum dry density.

CONSTRUCTION CONSIDERATIONS

General

It is recommended that Tierra be retained to provide observation and testing of construction activities involved in the foundation earthwork and related activities of this project. Tierra cannot accept any responsibility for any conditions which deviate from those described in this report, if not engaged to provide construction observation and testing for this project.

Fill Placement and Subgrade Preparation

The following are our recommendations for overall site preparation and mechanical densification work following the ground improvement/remediation program for the construction of the proposed

improvements based on the anticipated construction and our test boring results. These recommendations should be used as a guideline for the project general specifications prepared by the design engineer.

1. The site should be cleared; this primarily includes removing any deleterious materials currently on the site such as roots, organics, tree stumps or other buried or surface debris. It is recommended that any undesirable material be removed to the satisfaction of Tierra prior to beginning construction at the site. Resulting excavations should be backfilled with compacted structural fill. It is important that pavement and structure remnants be removed in their entirety.

As a minimum, it is recommended that the clearing operations extend at least five (5) feet beyond the development perimeters.

2. Following the clearing, the development area should be proofrolled. The proofrolling may consist of compaction with a large diameter, heavy vibratory drum roller (if not within 50 feet of existing structures). The vibratory drum roller should have a static drum weight on the order of 8 to 10 tons and should be capable of exerting a minimum impact force of 36,000 pounds (DYNAPAC CA-250 or equivalent is expected to provide acceptable results). Vibratory rollers should not be used within 50 feet of any existing structures. Areas within 50 feet of existing structures should be compacted using a fully loaded 2 cubic yard capacity front-end loader or equivalent (i.e. through non-vibratory means). The proofrolling equipment should make a minimum of eight (8) overlapping passes over the structure and pavement areas with the successive passes aligned perpendicular.
3. Careful observations should be made during proofrolling to help identify any areas of soft yielding soils that may require over excavation and replacement. The backfilling may be done with well-compacted, suitable fill such as clean sand (i.e. less than 12% passing the No. 200 sieve), gravel, or crushed FDOT No. 57 or FDOT No. 67 stone.
4. It is recommended that the subgrade within the building and pavement areas be compacted to a dry density of at least 95% of the Modified Proctor maximum dry density to a minimum depth of one (1) foot below stripped grade.
5. Following satisfactory completion of the initial compaction and proofrolling, the structure and pavement areas may be brought up to finished subgrade levels, if needed, using structural fill. Imported fill should consist of fine sand with less than 12% passing the No. 200 sieve, free of rubble, organics, clay, debris and other unsuitable material. Fill should be tested and approved prior to acquisition. Approved sand fill should be placed in loose lifts not exceeding 12 inches in thickness and should be compacted to a minimum density of 95% of the Modified Proctor maximum dry density. Density tests to confirm compaction should be performed in each fill lift before the next lift is placed.
6. Prior to beginning compaction, soil moisture contents may need to be controlled in order to facilitate proper compaction. If additional moisture is necessary to achieve compaction objectives, then water should be applied in such a way that it will not cause erosion or removal of the subgrade soils. Moisture content within the percentage range needed to achieve compaction (typically ± 2 percent of optimum) is recommended prior to compaction of the natural ground and fill.

7. After compaction of insitu soils or fill lifts, the building foundation excavations can begin. Foundation excavations should be observed by the geotechnical engineer or a representative to explore the extent of any loose, soft, or otherwise undesirable materials.
8. If the foundation excavations appear suitable as load bearing materials, the bottom of the foundation excavations should be compacted to a minimum density of 95% of the Modified Proctor maximum dry density to a minimum depth of one (1) foot below the bottom of the footing depth, as determined by field density compaction tests.
9. If soft pockets are encountered in the footing excavations, the unsuitable materials should be removed and the proposed footing elevation may be re-established by backfilling. This backfilling may be done with a well-compacted, suitable fill such as clean sand, gravel, or crushed FDOT No. 57 or FDOT No. 67 stone. Sand backfill should be compacted to a minimum density of 95% of the Modified Proctor maximum dry density.
10. Immediately prior to reinforcing steel placement, it is suggested that the bearing surfaces of all footing and floor slab areas be compacted using hand operated mechanical tampers. In this manner, any localized areas, which have been loosened by excavation operations, should be adequately re-compacted.
11. Backfill soils placed adjacent to footings or walls should be carefully compacted with a light rubber-tired roller or vibratory plate compactor to avoid damaging the footings or walls. Approved sand fills to provide foundation embedment constraint should be placed in loose lifts not exceeding 6 inches and should be compacted to a minimum density of 95% of the Modified Proctor maximum dry density.

A representative from our firm should be retained to provide on-site observation of earthwork and ground modification activities. Density tests should be performed in the top one (1) foot of compacted existing ground, each fill lift, and the bottom of foundation excavations within sandy soils. It is important that Tierra be retained to observe that the subsurface conditions are as we have discussed herein, and that foundation construction ground modification and fill placement is in accordance with our recommendations.

Drainage and Groundwater Concerns

The groundwater levels presented in this report are the levels that were measured at the time of our field activities. Fluctuation should be anticipated. We recommend that the Contractor determine the actual groundwater levels at the time of the construction to determine groundwater impact on this construction procedure.

Water should not be allowed to collect in the foundation excavations, on the floor slab areas, or on prepared subgrades of the construction either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater, or surface runoff. Positive site drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath the floor slabs. The grades should be sloped away from the building and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill and floor slab areas of the building.

Structural Fill

If necessary, all materials to be used for structural fill or backfill should be evaluated and tested by Tierra prior to placement to determine if the materials are suitable for the intended use. Suitable fill materials should consist of fine to medium sand with less than 12% passing the No. 200 sieve, free of demolition debris, rubble, pavement remnants, organics, clay, debris and other unsuitable material and evaluated against project engineering requirements.

In general, the soils of Stratum 1 (SP/SP-SM) may be moved and used for grading purposes, site leveling, general engineering fill, structural fill and backfill in other areas, provided the fill is free of organic materials, clay, debris or any other material deemed unsuitable for construction and evaluated against engineering fill requirements.

Excavations

Excavations and temporary side slopes should comply with the Occupational Safety and Health Administration's (OSHA) trench safety standards, 29 C.F.R., s. 1926.650, Subpart P, all subsequent revisions or updates of OSHA's referenced standard adopted by the Department of Labor and Employment Security and Florida's Trench Safety Act, Section 553.62, Florida Statutes.

We are providing this information solely as a service to our client. Tierra does not assume responsibility for construction site safety or the contractor's or other party's compliance with local, state, and federal safety or other regulations.

REPORT LIMITATIONS

The analyses, conclusions and recommendations contained in this report are professional opinions based on the site conditions and project layout described herein and further assume that the conditions observed in the exploratory borings are representative of the subsurface conditions throughout the site, i.e., the subsurface conditions elsewhere on the site are the same as those disclosed by the borings. If, during construction, subsurface conditions different from those encountered in the exploratory borings are observed or appear to be present beneath excavations, we should be advised at once so that we can review these conditions and reconsider our recommendations where necessary.

If there is a substantial lapse in time between the submittal of this report and the start of work at the site, or if conditions or project layout are changed due to natural causes or construction operations at or adjacent to the site, we recommend that this report be reviewed to determine the applicability of conclusions and recommendations considering the changed conditions and time lapse.

This report was prepared for the exclusive use of the Stantec and their client for evaluating the design of the project as it relates to the geotechnical aspects discussed herein. It should be made available to prospective contractors for information on factual data only and not as a warranty of subsurface conditions included in this report. Unanticipated soil conditions may require that additional expense be made to attain a properly constructed project. Therefore, some contingency fund is recommended to accommodate such potential extra costs.

APPENDIX

Boring Location Plan

Soil Profiles

Summary of Geotechnical Parameters for Ponds



BORING LOCATION PLAN



LEGEND

- APPROXIMATE LOCATION OF AUGER BORING
- APPROXIMATE LOCATION OF SPT BORING
- APPROXIMATE LOCATION OF BOREHOLE PERMEABILITY TEST

DRAWN BY:
SW

CHECKED BY:
KH

APPROVED BY:
TEM

DATE:
FEB 2023

ENGINEER OF RECORD:
THOMAS E. MUSGRAVE, JR., P.E.
FLORIDA LICENSE NO.:
81669



TIERRA
7351 Temple Terrace Highway
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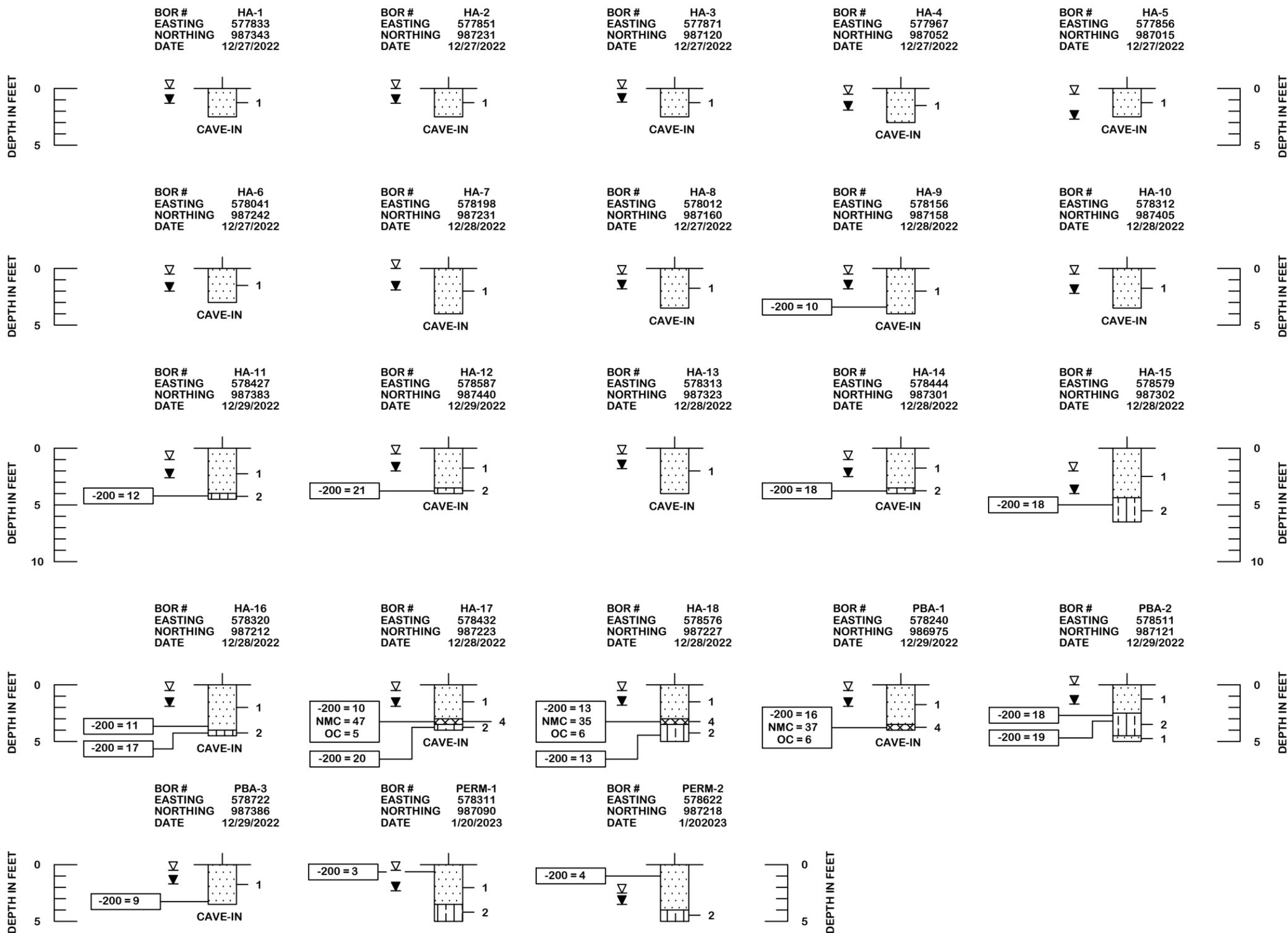
PROJECT NUMBER:
6511-19-254

GEOTECHNICAL ENGINEERING SERVICES
NORTH PORT UTILITY
SARASOTA COUNTY, FLORIDA

SHEET 1

SOIL PROFILES

LEGEND



SOIL PROFILES

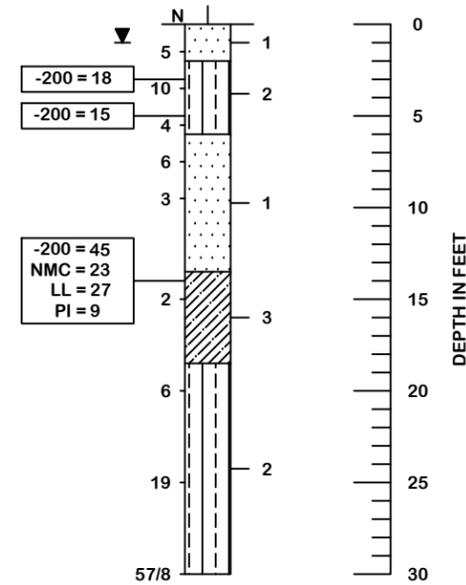
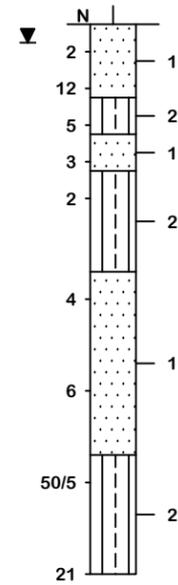
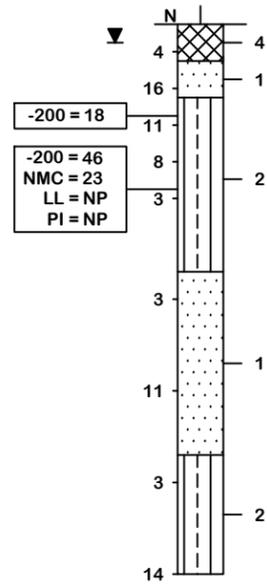
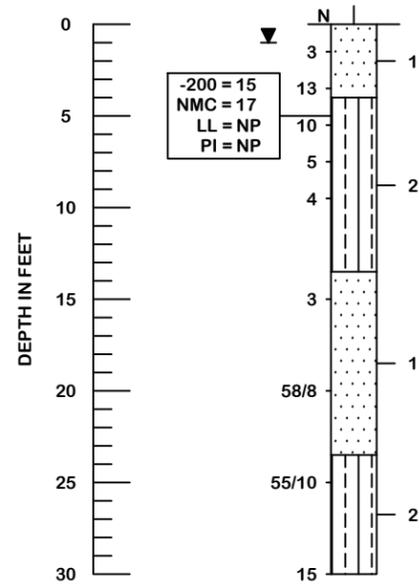
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DATE 1/13/2023



- 1 GRAY TO BROWN SAND TO SAND WITH SILT (SP/SP-SM)
- 2 GRAY TO BROWN SILTY SAND TO CLAYEY-SILTY SAND (SM/SC-SM)
- 3 GRAY TO BROWN CLAYEY SAND (SC)
- 4 DARK GRAY TO BROWN SAND TO SAND WITH SILT TO SILTY SAND WITH ORGANICS (PT)
- 5 WEATHERED LIMESTONE TO CALCAREOUS CLAY
- GROUNDWATER LEVEL ENCOUNTERED DURING INVESTIGATION
- ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
- N SPT N-VALUE IN BLOWS/FOOT FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED)
- SP UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2488) GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW
- 50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
- CAVE-IN BORING TERMINATED DUE TO BOREHOLE COLLAPSE FROM GROUNDWATER INTRUSION
- EASTING EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83 DETERMINED USING HAND-HELD GARMIN ETREX GPS EQUIPMENT WITH A REPORTED ACCURACY OF +/- 10 FEET
- NORTHING NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83 DETERMINED USING HAND-HELD GARMIN ETREX GPS EQUIPMENT WITH A REPORTED ACCURACY OF +/- 10 FEET
- 200 PERCENT PASSING #200 SIEVE
- NMC NATURAL MOISTURE CONTENT (%)
- LL LIQUID LIMIT (%)
- PI PLASTICITY INDEX (%)
- OC ORGANIC CONTENT (%)
- NP NON PLASTIC

AUTOMATIC HAMMER	
GRANULAR MATERIALS- RELATIVE DENSITY	SPT (BLOWS/FT.)
VERY LOOSE	LESS THAN 3
LOOSE	3 TO 8
MEDIUM	8 TO 24
DENSE	24 TO 40
VERY DENSE	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT (BLOWS/FT.)
VERY SOFT	LESS THAN 1
SOFT	1 TO 3
FIRM	3 TO 6
STIFF	6 TO 12
VERY STIFF	12 TO 24
HARD	GREATER THAN 24

DRAWN BY:
SW

CHECKED BY:
KH

APPROVED BY:
TEM

DATE:
FEB 2023

ENGINEER OF RECORD:
THOMAS E. MUSGRAVE, JR., P.E.
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SCALE:
NOTED

PROJECT NUMBER:
6511-19-254

GEOTECHNICAL ENGINEERING SERVICES
NORTH PORT UTILITY
SARASOTA COUNTY, FLORIDA

SHEET 3

SOIL PROFILES

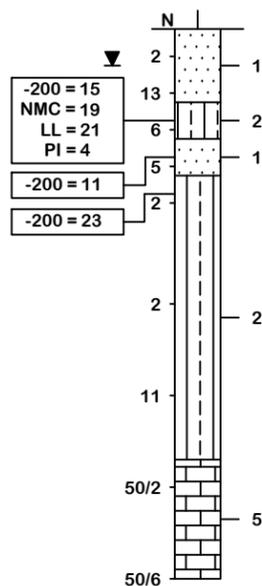
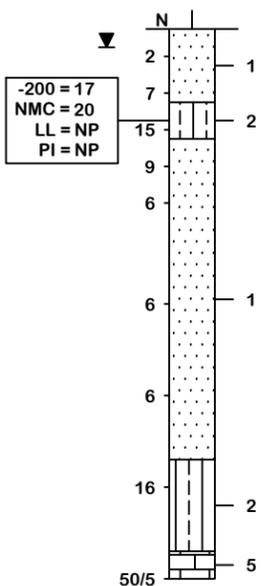
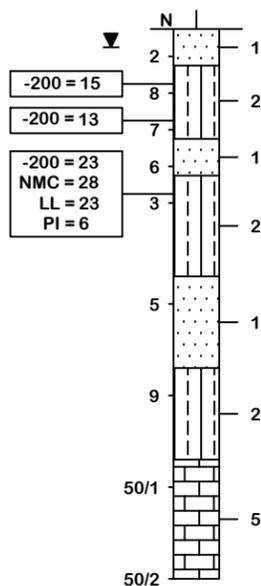
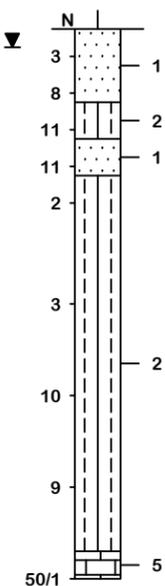
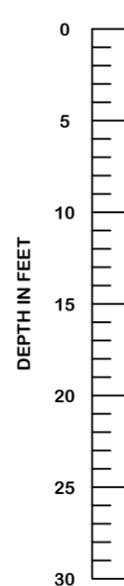
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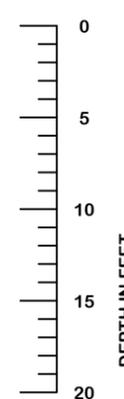
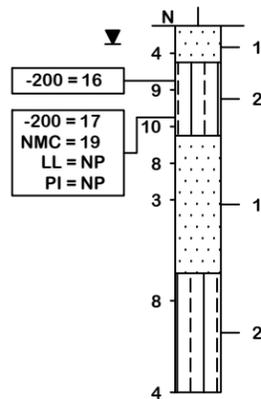
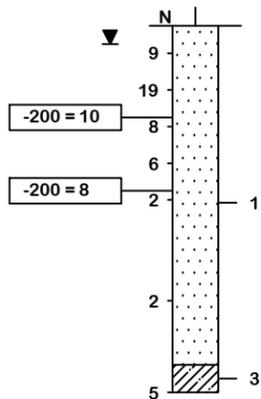
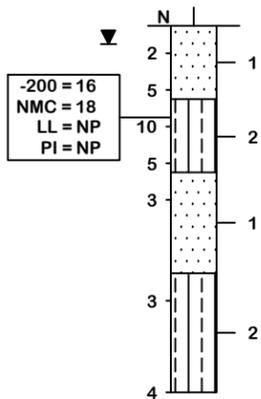
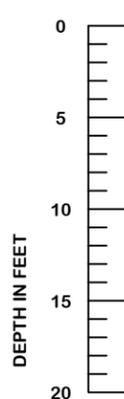
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DATE 1/16/2023

BOR # PBS-3
EASTING 578269
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DATE 1/16/2023



- 1 GRAY TO BROWN SAND TO SAND WITH SILT (SP/SP-SM)
- 2 GRAY TO BROWN SILTY SAND TO CLAYEY-SILTY SAND (SM/SC-SM)
- 3 GRAY TO BROWN CLAYEY SAND (SC)
- 4 DARK GRAY TO BROWN SAND TO SAND WITH SILT TO SILTY SAND WITH ORGANICS (PT)
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- 50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
- CAVE-IN BORING TERMINATED DUE TO BOREHOLE COLLAPSE FROM GROUNDWATER INTRUSION
- EASTING EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83 DETERMINED USING HAND-HELD GARMIN ETREX GPS EQUIPMENT WITH A REPORTED ACCURACY OF +/- 10 FEET
- NORTHING NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83 DETERMINED USING HAND-HELD GARMIN ETREX GPS EQUIPMENT WITH A REPORTED ACCURACY OF +/- 10 FEET
- 200 PERCENT PASSING #200 SIEVE
- NMC NATURAL MOISTURE CONTENT (%)
- LL LIQUID LIMIT (%)
- PI PLASTICITY INDEX (%)
- OC ORGANIC CONTENT (%)
- NP NON PLASTIC

AUTOMATIC HAMMER	
GRANULAR MATERIALS- RELATIVE DENSITY	SPT (BLOWS/FT.)
VERY LOOSE	LESS THAN 3
LOOSE	3 TO 8
MEDIUM	8 TO 24
DENSE	24 TO 40
VERY DENSE	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT (BLOWS/FT.)
VERY SOFT	LESS THAN 1
SOFT	1 TO 3
FIRM	3 TO 6
STIFF	6 TO 12
VERY STIFF	12 TO 24
HARD	GREATER THAN 24

DRAWN BY:
SW

CHECKED BY:
KH

APPROVED BY:
TEM

DATE:
FEB 2023

ENGINEER OF RECORD:
THOMAS E. MUSGRAVE, JR., P.E.
FLORIDA LICENSE NO.:
81669



SCALE:
NOTED

PROJECT NUMBER:
6511-19-254

GEOTECHNICAL ENGINEERING SERVICES
NORTH PORT UTILITY
SARASOTA COUNTY, FLORIDA

SHEET 4

**Summary of Geotechnical Parameters for Ponds
Utility Administration and Warehouse Facility
Sarasota County, Florida
Tierra Project No. 6511-19-254**

Boring Name	Approximate Boring Location ⁽¹⁾ State Plane West NAD83		Measured Groundwater Table		Sarasota County USDA Soil Survey Data		Estimated Seasonal High Groundwater Table ⁽³⁾	Field Hydraulic Conductivity Tests					Estimated Soil Porosity (%)	Estimated Suction Head (in)
	Easting	Northing	Date Recorded	Depth (ft)	Map Unit	Estimated SHGWT Depth ⁽²⁾ (ft)	Depth (ft)	Test Depth (ft)	Stratum Tested	Percent Finer No. 200 Sieve	In-Situ Horizontal Hydraulic Conductivity Rate, k_h ⁽⁴⁾ (feet/day)	In-Situ Vertical Hydraulic Conductivity Rate, k_v ⁽⁴⁾ (feet/day)		
PERM-1	578311	987090	1/20/2023	2.5	10	0.5-1.5	0.5	1.0	1	3	≤40	≤40	30	2.0
PERM-2	578622	987218	1/20/2023	3.5	10	0.5-1.5	2.5	2.5	1	4	≤40	≤40	30	2.0

Notes:

⁽¹⁾ Boring/test locations are in State Plane West coordinates and were determined using a hand-held GPS device with a reported accuracy of ± 10 feet.

⁽²⁾ Seasonal High Groundwater Table (SHGWT) depth estimated based on the Sarasota County, Florida USDA Soil Survey information.

⁽³⁾ Seasonal High Groundwater Table (SHGWT) depth estimated based on a combination of factors including the soil stratigraphy, measured groundwater levels, the Sarasota County, Florida USDA Soil Survey information and topography.

⁽⁴⁾ The Hydraulic Conductivity Rates in this table are **not factored**. The designer should apply an appropriate factor of safety, as applicable.



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April 2, 2024
ADDENDUM 2

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE ~~APRIL 16~~, April 23, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

Last day for Questions April 9, 2024 at 2:00 PM
Bid Opening Date April ~~16~~ 23, 2024, at 2:00 PM

1Q: Provide Sheet A202 since it is missing.
1A: **Sheet A202 will be provided in upcoming Addendum.**

2Q: While it was mentioned at the pre-bid meeting the Geotechnical Report was issued in the original set of documents under separate cover, there is no report included. Please provide.
2A: **The current Geotechnical Report, dated 11/3/2021 by GCES Engineering Services, LLC, was provided in addendum 1.**

3Q: Provide structural design and specifications for the Steel Tube Columns and Header for the Rolling Shutter at Room 176.
3A: **Details will be provided in future addendum, however for the sake of bidding assume a welded steel frame (2 columns with header across the top) furnished from HSS6x6x3/16 with steel base plate fastened to the concrete floor. Fencing sub will be responsible for attaching all fencing to steel frame. Roll down shutter will be side mounted to interior face of steel columns.**

4Q: Provide finish for the 8" CMU walls at the Trash/Dumpster Enclosure. Also provide location and quantity for interior and exterior pipe bollards, if required.
4A:
- **Ground face CMU finish**
- **Bollard location and quantity should be gotten from architecture plans. Use sheet A101 – A101C.**

5Q: Provide details and specifications including approved manufacturer, make/model, finish, installation instructions, etc. for the following.
a. Signs: Interior, Exterior and Monuments
b. Rain Chain

- c. Trash/Dumpster Enclosure Gates

5A:

- a. See signs detailing on A661
- b. Rain chain specification to be included in future Addendum.
- c. Trash/ Dumpster enclosure Gates details and specification to be included in future Addendum.

6Q: The following specifications are included in the bid documents however we cannot locate them on the plans. Please provide location and/or quantity to be included in the bid.

- d. 04 72 00 Cast Stone Masonry
- e. 06 42 00 Wood Paneling
- f. 08 56 59 Service and Teller Window Units
- g. 08 83 00 Mirrors
- h. 09 67 23 Resinous Flooring
- i. 09 72 00 Wall Covering
- j. 10 11 00 Visual Display Units
- k. 10 72 00 Flag Poles since none on shown on Sheet A000
- l. 12 48 13 Entrance Floor Mats and Frames
- m. 32 33 00 Site Furnishings: Benches, Tables, Recycle Receptacle and Waste Receptacles since none are shown on Sheet A000
- n. 32 33 13 Site Bicycle Racks since none on shown on Sheet A000

6A:

d. Please disregard spec section 04 72 00. It shall be removed from future Issued For Construction documents.

e. Please disregard spec section 06 42 00. It shall be removed from future Issued For Construction documents.

f. See plans A101A (room 104 staff assistant 1) and A101B (RM.170 electronics shop)

g. Mirrors location shown on enlarged toilet plans and elevation. See A501 – A504

h . Please disregard spec section 09 67 23. It shall be removed from future Issued For Construction documents.

i. Please disregard spec section 09 72 00. It shall be removed from future Issued For Construction documents.

j. See architectural Finish plans series A131 series for locations

k. Flag pole location to be provided on civil and architectural site plan. lighting to specify fixtures needed for flag pole. Details provided in upcoming addendum.

i. Walk off Mats are covered in spec section 09 68 13 and location can be found on Finish plans (A131). Please disregard spec section 12 48 13. It shall be removed from future Issued For Construction documents.

m. Spec section 32 33 00 site furnishings is shown on civil plan C 103. Architecture drawings to be updated in an upcoming addendum.

n. Spec section 32 33 13 bike racks is shown on civil plan C 103. Architecture drawings to be updated in an upcoming addendum.

7Q: We would like to respectfully request that Generac Power Systems be added to the approved generator manufactures list for this project. Generac is the 3rd largest industrial generator manufacturer in the North American market and meets or exceeds the approved generator specifications.

7A: **Acceptable. All specifications are basis of design only, equivalent products are acceptable and will be reviewed during the submittal process.**

8Q: I represent Corflex Operable Partitions and I would like to offer a furnished and installed price for the above mention project. Corflex has been manufacturing and installing high quality, long lasting operable and glass operable partitions for over 30 years.

Please note, Modernfold who is listed in the specification, does not meet the requirements and I have highlighted this in the attached specification.

I have attached product data on the Corflex Series 5500 Paired Panel System for your review.

8A: **All specifications are basis of design only, equivalent products are acceptable and will be reviewed during the submittal process.**

9Q: Confirm that the cabinet contractor must be AWI (QCP) certified per Paragraph 1.6 of Section 06 41 00 since this will limit local subcontractor participation. Additionally, will the cabinet contractor be required to comply with Paragraph 2.2 (B), (C), & (D) which outlines sustainability and FSC compliance?

9A: **Confirmed**

10Q: Confirm that both the structural steel fabricator and erector must be AISC Quality certified per Paragraph 1.7 of Section 05 12 00 since this will limit local subcontractor participation.

10A: Confirmed, the steel fabricator and erector shall be AISC certified.

11Q: Provide details and specifications including approved manufacturer, make/model, finish, installation instructions, etc. for the following.

- a. LVT -4 as implied on Sheet A131A at Room 117 & 144 and Sheet A131B at Room 164, since it is not included on Sheet A641.
- b. Solid surface windowsills per Detail 10/A321 since it is not included on Sheet A641 or Sections 06 41 00 or 12 36 00.
- c. Interior 10' high metal fence at Rooms 175 & 176 and Doors 175C & 176A per Sheet A101C.
- d. Glass for Door Types NL & FL (147A only) and frames G2 & G3 since it is not specified on Sheet A611.
- e. Ice machines, microwaves – over the range, ranges, water dispensers, and coffee makers, since they are not included in Section 11 30 13.
- f. Glass white boards as implied on Sheet A131A in the corridor, Room 117 & 124.
- g. Mechanical louvers shown on Sheet M201C identified by the #5 and schedule on Sheet M-701. The schedule refers to the specifications however Section 23 37 13 does not include louvers. Note: There are 2 – 84" x 92" and 5 – 84" x 48".
- h. Waterproofing at the splash basins per Detail 3/A013.
- i. Waterproofing from the top of the slab to the top of the footing at exterior sections 9, 10, 11, & 12/A321.

11A:

- a. **LVT-2 is Manf: Interface, Style: Brushed Lines, Color A01605 Graphite
LVT-3 is Manf: Interface, Style: Brushed Lines, Color A01618 Celadon
LVT-4 is Manf: Interface, Style: Native Fabric, Color A00806 Twine**

Interior Materials Schedule on sheet A641, and Finish Legend on sheet A131 shall be revised in future addendum.

- b. Please use SSM-1. Additional details shall be provided in future addendum.
- c. interior 10' metal fence uses spec section 10 22 13 included in submission.
- d. Glass for door types NL & FL and frames G2 & G3 shall be tempered glass. Additional details shall be provided in future addendum.
- e. See pantry equipment specs in spec section 11 30 13
- f. Glass white board to use spec section 10 11 00 Visual Display Units
- g. Refer to "233300 - AIR DUCT ACCESSORIES" section 1.11 for mechanical louver specifications.
- h. Provide liquid applied bituminous water proofing – BOD – Henry Aqua-Bloc WB Elastomeric Asphalt Emulsion Waterproofing or approved equal. Specification section to be updated in future addendum.
- i. continuous water proofing to be liquid applied bituminous to match waterproofing in splash basin. See response to Q11h.

12Q: The following specifications are included in the bid documents however we cannot locate them on the plans. Please provide location and/or quantity to be included in the bid.

- a. Knox Box(s) per Paragraph 2.20 of Section 08 71 00.
- b. Wire Mesh Partitions per Section 10 22 13.
- c. Glass Type G4, G5 & G6 per Paragraph 2.6 of Section 08 80 00.
- d. All-Glass Entrances and Storefronts per 08 41 26. If this is required also confirm the glazing specification.
- e. Automatic Entrances per Section 08 42 29. If this is required coordinate with the Door Schedule on Sheet A611 and Section 08 71 00.
- f. Flush Wood Doors per Section 08 14 16.
- g. Corner Guards, Wall Panels, and Wall Caps per Section 10 26 01. Confirm that rubber bumper guards in the Warehouse Room 174 as shown on Sheet A131C is the only wall protection required.
- h. High Performance Coatings per Section 09 96 00. Note that there are separate specification sections for both interior and exterior painting. Is the exterior of the tilt wall panels to be coated with high build epoxy coating for concrete as implied by Paragraph 2.3(B)?

12A:

- a. Confirmed. Location will be provided in future addendum.
- b. Spec section 10 22 13 included in set. See sheet A101C "metal fence."
- c. Glass type G4, G5 & G6 not used. Types will be removed in future addendum.
- d. specification section 08 41 26 can be disregarded and will be removed in future addendum. We will provide specification section 08 43 13 - Aluminum-Framed Storefronts in future addendum. Bases of design for all storefront assemblies to be YKK AP YHS 50 TU - Thermally broken impact resistant storefront system or approved equal.
- e. Spec section 08 42 29 confirmed. Automatic entrances will be provided at Doors 100 . 147a,166a,166b will be added to door schedule on future addendum. Sheet A101A & sheet A101b to be updated on future addendum. Electrical drawing to be updated in future addendum.
- f. Spec section 08 14 16 can be disregarded and will be removed in future Issue For Construction Package.
- g. Confirmed, rubber bumper guards noted in warehouse is the only wall protection.
- h. Confirmed. Intent is painted concrete when exposed. See sheet A200 for locations.

13Q: Confirm that the only acceptable locksets shall be "Best" since this is the one manufacture listed per Section 08 71 00.

13A: All specifications are basis of design only, equivalent products are acceptable and will be reviewed during the submittal process.

14Q: Confirm that Door Types FLD & HL are not applicable to this project since neither is shown in the Door Schedule on Sheet A611.

14A: Door types FLD & HL not in project will remove from future addendum.

15Q: Provide guidance as to the terrazzo specification since Section 09 66 13 – Portland Cement Terrazzo Flooring does not include a list of acceptable manufacturers whereas Sheet A200, TZ1 specifies "Stone Hard".

15A: Noted Stone Hard colors on A200 are basis of design only, equivalent products are acceptable and will be reviewed during the submittal process.

16Q: Provide guidance as to the specification and location for Window Treatment(s) since all RCP drawings specifies "horizontal louver blinds at all windows, UON", whereas Section 12 24 00 specifies manual roller shades as does Sheet A641. Are window shades and/or blinds needed at the high windows in the Warehouse?

16A: Use Horizontal Louver blinds. Manuel roller shades spec section will be removed in future Issue For Construction package. As noted in the General Notes – Finish Plan: All exterior windows to receive window treatments with the exception of the clerestories in Sector B & C.

17Q: Provide Detail 11/A510 as noted on Sheet A101A in Room 117.

17A: Use Typical casework detail(6/A801) to be provided in set without top casework. Revised detail will be provided in upcoming addendum.

18Q: Provide a list of acceptable manufacturers for the Custom Fabricated Industrial Equipment (work benches) that complies with the long list of requirements outlined in Section 11 11 36.

18A: local metal fabricator should be chosen by contractor.

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

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Receipt of Addendum No. 2 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.2



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April 2, 2024
ADDENDUM 3

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE APRIL 23, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

- 1Q.: Confirm that the light fixtures are single sourced since only one manufacturer is identified in the schedule on Sheet EA002. If not, provide approved alternative manufacturers for each fixture.
- 1A: We request that bidding on the lighting package be based on specified fixtures. However, the lighting team can review alternates for potential cost savings based on compliance with similar performance and LEED requirements.
- 2Q: Confirm that the finishes are singled source since only one manufacturer is identified in the schedules on Sheet A641. If not, provide approved alternative manufacturers for each finish.
- 2A: Confirmed for finishes listed in Interior Materials Schedule unless otherwise noted as BOD. If item scheduled or specified has been discontinued notify architect for selection of alternative.
- 3Q: Confirm that the bid price is to include cabling/wiring, devices, and equipment for all systems such as access control, A/V, CCTV, etc. Also, verify that access control is single sourced "Lenel". If not, provide approved alternative manufacturers. If the systems are to be included does the City utilized a preferred vendor? If so, please provide vendor information.
- 3A: The City will not be providing any owner purchased equipment on this project. Lenel is the manufacturer of the City-wide door access system. As such, the City wants to ensure it is installing the same to guarantee compatibility.
- 4Q: Confirm that the exposed structural steel columns at the walkway canopy shown on Sheet S110 are to be hot dipped galvanized. If required, provide a specification for the finish/coating for these exposed columns.
- 4A: All structural steel with exposure to weather shall be hot dipped galvanized per Note 12 of the Structural Steel section on Sheet S000. exposed structural steel at main entrance canopy to be painted in addition to galvanized. Specification section 09 96 00 to be revised in upcoming addendum to provide requirement for painting exposed steel.
- 5Q: If required, provide a specification for the finish/coating for the hot dipped galvanized structural steel beams and columns at the covered parking canopy and the pipe town canopy as shown on Sheet S121. Also, if required, should the under side of the exposed roof deck be finished/coated?

5A: All structural steel with exposure to weather shall be hot dipped galvanized per Note 12 of the Structural Steel section on Sheet S000. exposed structural steel at main entrance canopy to be painted in addition to galvanized. Specification section 09 96 00 to be revised in upcoming addendum to provide requirement for painting exposed steel.

6Q: Provide a dimensionally accurate route for the distance to be included in the bid price for the "(4) 5" c ductbank by EC" for the incoming primary power as shown on Sheet E601.

6A: Coordination with FPL is required for exact route to utility transformer.

7Q: Provide a dimensionally accurate route for the distance to be included in the bid price for the fire alarm pathway as noted on the riser per Sheet E603 referencing "to garage" since this information is not shown on the site electrical plan.

7A: Dimensionally accurate route between FACP in Electrical 115 and Fire Alarm Transponder Panel in Electrical 180 shall be provided. Path will follow underground conduit route for electrical distribution wiring between Electrical 180 and Main Electrical 111 shown on the site plan. The notation of two conduits going from Main Voice and Fire Alarm Control Panel FACP located in Electrical 115 to garage on E-603 is an error and will be updated for future addendum.

8Q: Should the underground electrical conduits from Rooms 111 & 119A to Room 180 as shown on Sheet E201 be installed per the concrete ductbank detail?

8A: Yes. Please note that ductbank conduit arrangements, routing, and proximity to building footings and incoming service ductbanks are to be coordinated prior to construction.

9Q: Provide guidance as to what should be included in the bid price for "coordinate fiber connection back to City Hall" per Note 28.7 on Sheet E201.

9A: The City will not be providing any owner purchased equipment on this project. The City is expecting this project to include the interconnect of the existing city-owned dark fiber on Pan American Boulevard. This work will be responsibility of the selected contractor. This city-owned fiber would then be run directly into our main IT MDF by the contractor and terminated. The other conduits would be utilized for our normal ordering of Frontier/Comcast services.

10Q: Provide guidance as to what should be included in the bid price for the relamping of all fixtures per Reflected Ceiling Note 15 on Sheet G013. Does the City expect all fixtures to be relamped at completion of the project and provided with 10% spare (new lamps) for all lamp types?

10A: Lighting team does not anticipate any relamping to be necessary. All new lighting is shown on EA drawings. If discrepancies arise in the field, please notify the design team.

11Q: Provide structural details for the footing and 36" wide base for the monument sign (Type E) as shown on Sheet A661.

11A: monumental sign (type E) structural detail to be provided in future addendum.

12Q: Provide details and specifications for the following at the security fence/gate shown on Sheet A012.

- a. Engraved graphics
- b. Card Reader (not shown on Sheet E401A)
- c. Exit Hardware
- d. Door Closure
- e. Gate Hinges
- f. Finish/Coating if required for any of the components.

12A: After review with client the design of the fence and associated gate will be simplified to match the typical security fencing at the western entry side of the site . Fence panel, hardware, and finishes provided by manufacturer. See specification section 32 31 36. bases od design Ameristar perimeter security MAGESTIC 3 rail or approved equal. sheet A012 to be updated in upcoming addendum to match revised design intent

- a. Custom engraved graphics removed from project . See response to Q12.
- b. confirmed. Card reader to be shown on electrical sheet in future addendum
- c. Hardware provided by manufacturer

- d. Hardware provided by manufacturer
- e. Hardware provided by manufacturer
- f. Finish provided by manufacturer . Selection from manufacturer stock finish options to be provided in upcoming addendum.

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

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Receipt of Addendum No. 3 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.3



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April 11, 2024
ADDENDUM 4

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE APRIL 23, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

1Q.: Clarify the City's position as to the responsibility for unsuitable subsurface conditions or differing site conditions not clearly shown and quantified in the Geotechnical Report(s) since the documents imply that the contractor is responsible for these conditions no matter how severe they may be. Will the City compensate the contractor including cost and time for the removal and replacement for unsuitable subsurface conditions? Is the bid price to include the speculative cost (contingency dollars) for unknown unsuitable subsurface conditions or differing site conditions?

1A: See spec section 00 73 00 - Unsuitable Materials Supplementary Instructions. Bidding contractors to provide a unit price per cubic yard to remove unsuitable soils.

2Q: Confirm that Stantec's design documents including plans and specifications for Civil, Architectural, Structural, MEP and Fire Protection comply with all AHJ's (State of FL, Sarasota County, City of North Port, etc.) requirements, standards, codes, ordinances, etc. and the contractor is not to include any costs or contingencies for defects, errors, omissions, or conflicts since we are not a licensed design professional and cannot determine if Stantec's documents conform to all requirements. Also confirm that Stantec has coordinated the bid documents and has eliminated ambiguities and conflicts.

2A: Stantec does not confirm the elimination of any and all ambiguities or conflicts within the contract documents. The design documentation is based on conformance with the AHJ's for this location, and has been coordinated within the design industry Standard of Care. The contractor is responsible for constructing the facility in compliance with all of the design documents in total, and the contractor's approach to pricing these design documents is their decision.

3Q: Confirm that seismic design, control, and installation for a number of systems and components is necessary since a lot of specification sections include these requirements.

3A: Disregard spec section. No seismic requirements.

4Q: Confirm that all tile floors are to receive a waterproofed membrane outlined per Section 07 14 01 since it is not shown in the drawing details or in Section 09 30 00 Tiling.

4A: Yes include waterproofing membrane. As noted in detail T-7 on sheet A641, include waterproofing membrane at all wet location installations.

5Q: When will the interior portion of the project be the focus? I'd like to be invited and discuss what we can offer.

- We offer multiple services that include but not limited to furnishings (indoor & outdoor), architectural walls, etc.

5A: This is not a scope question

6Q: Sheet S120. Please confirm WF-5.0 is the correct wall footing for the yard wall. The dimensions shown on the sheet do not scale as 5' wide.

6A: The WF-5.0 is the intended size as labeled on plan.

7Q: Sheet A601 Interior Partition Schedule. The wall tag "W1" shown on A101B and A101C is not included on the partition schedule. Please provide W1 wall details.

7A: W1 wall type included in set. See A 200 for wall assembly.

8Q: Sheet A101C and A111C RCP. Please confirm that no top enclosure will be required for the fenced "Parts Issue Return" Room 176.

8A: Confirmed .No top enclosure in room 176.

9Q: Sheets E401A-E402B, Low Voltage Systems. Please provide a riser diagram showing the fiber strand count and pair count for the category 3 copper conductors. Please also provide rack elevations for the IT Closet layout for each of the four (4) IT closets showing the racks and ladder racks required.

9A: The riser diagram listed in the plans are for the fire alarm system. The project needs 24 strand single mode fiber run between all IT closets. A telecommunications riser diagram and rack designs will be provided in an upcoming addendum.

10Q: Page 40 of document "RFB 2024-15 Solicitation" states the Contractor shall self-perform not less than 60% of the total contract amount. Please consider removing or reducing this amount to zero or less than 5%.

10A: No, the 60% requirement will not be applicable to this project.

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

Keith Raney, CPPB, CPPO
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Receipt of Addendum No. 4 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.4



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April 11, 2024
ADDENDUM 5

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE APRIL 23, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

1Q.: Will the City accept lower insurance limits for certain subcontractors since the amounts listed in the specification are quite high for the smaller categories of work, such as finishes, specialties, industrial storage equipment, etc.? If the City requires the \$6 million liability coverage, a number of local subcontractors will not be able to participate. A more reasonable limit would be in the range of \$1 to \$2 million.

1A: See Attached Revised Insurance Requirements

2Q: The following specifications are included in the documents but are not listed on the Table of Contents. Please confirm these specifications are applicable to this project.

- a. 01 26 13 Request for Information
- b. 01 00 00 Restoration and General Requirements
- c. 01 51 00 Temporary Utilities and Controls
- d. 01 55 26 Temporary Traffic Control
- e. 09 83 00 Acoustic Finishes
- f. 10 22 13 Wire Mesh Partitions
- g. 10 51 29 Phenolic Lockers
- h. 23 05 80 Roof Curbs and Rails
2. Please provide the following missing specifications, if they are applicable to this project, since they are listed on the Table of Contents.
 - a. 09 41 00 Architectural Wood Casework
 - b. 09 63 13 Brick Flooring
 - c. 31 31 16 Termite Control
 - d. 32 11 00 Limerock Base Course and Stabilized Subgrade

2A:

- a. Confirmed that the spec section is applicable to the project. Spec section will be added to the TOC in future addendum .
- b. Confirmed that the spec section is applicable to the project. Spec section will be added to the TOC in future addendum .
- c. Confirmed that the spec section is applicable to the project. Spec section will be added to the TOC in future addendum .
- d. Confirmed that the spec section is applicable to the project. Spec section will be added to the TOC in future addendum .
- e. Confirmed that 09 83 00 Acoustic Finishes is applicable to the project. Spec section will be added to the TOC in future addendum.
- f. Confirmed that the spec section is applicable to the project. Spec section will be added to the TOC in future addendum .
- g. Confirmed that the spec section is applicable to the project. Spec section will be added to the TOC in future addendum .
- h. Confirmed that the spec section is applicable to the project. Spec section will be added to the TOC in future addendum .

2.

- a. Spec section will be deleted from TOC. Refer to spec section 06 41 00 for wood casework specifications.
- b. Spec section will be deleted from TOC.
- c. Spec section confirmed . Will be included in future addendum.
- d. Spec section will be provided in future addendum

3Q: Provide specifications, details, and cross section for the construction of the “stabilized emergency access” roadway and the “20’ stabilized access” from the parking lot to wetland 3 area as shown on Sheet C103.

3A: see sheet C114

4Q: Verify that all work outside of the property line including Pond #1 and the drives, curbs, sidewalks, etc. off Children Way is to be excluded from the bid price. If any of this work is to be included, provide specifications, details, sections, etc. so a complete estimate can be provided.

4A: Pond #1, shown in black linework in the civil plans, is to be included in the bid. All grayed out sitework to the North and West of the property lines is not included in the project.

4A: As shown on C103 of the plans, Ponds #1 and #2 are included in the project and should be included in the bid. The offsite pond, grayed out and not numbered, to the north property, western side, is not included in the project.

5Q: Verify that the “WASH” area as shown on Sheet C103 is to be excluded from the bid price. If the “WASH” is to be included, provide specifications, details, sections, etc. so a complete estimate can be provided.

5A: Reclaimed water and sewer service are provided to the wash location in the documents. Civil drawings will be updated in future addendum to provide concrete curb, hose bib, and oil/water separator connected to sewer service.

6Q: Verify that the "GARDEN" area as shown on Sheet C103 is to be excluded from the bid price. If the "GARDEN" is to be included, provide specifications, details, sections, etc. so a complete estimate can be provided.

6A: The garden area is to be sodded and included in the bid estimate.

7Q: Verify that the "PROPOSED AERIATION DEVICE" IN Pond #2 as shown on Sheet C103 is to be excluded from the bid price. If the "PROPOSED AERIATION DEVICE" is to be included, provide specifications, details, sections including piping, pumps, electrical design, etc. so a complete estimate can be provided.

7A: Please include the proposed aeration devices in Pond 1 and 2 in bid estimate (see response to addendum 5, question 4). Basis of design Kasco 4400HJF 240V Decorative Floating Fountain or equal. Civil and electrical to update documents in future addendum.

8Q: Although Sheet C113 includes pavement section design for both "HEAVY DUTY" and "REGULAR", Sheets C103, C104, and C105 does not delineate different pavement areas. Is all asphalt paving including the drive off Pan American Blvd to be "HEAVY DUTY"?

8A: There are 2 different hatch patterns shown on the plans. The customer parking and employee parking are regular duty pavement per the hatch patterns and associated legend.

9Q: Confirm the drive off Pan American Blvd is asphalt and not concrete. Also confirm there is no radius curbing or valley curb required.

9A: The drive is asphalt. Type F Modified curb is specified.

10Q: Provide specifications and details for the island area at the south gate per Sheet C103.

10A: Provide a Type D curb for the island.

11Q: Provide a survey including the size and species identifying the trees to be removed and those that are to remain.

11A: Survey will be provided in addendum 5 attachment pdf.

12Q: Provide a complete erosion sediment control plan clearly outlining the location for the various control devices since Sheet C120 is unclear. Should the double row silt fence for Figure 1 on Sheet C121 be installed around the entire perimeter of the site including the storm drainage extension East of the existing multi-family residential?

12A: Labels will be updated in future addendum.

13Q: Provide design details with elevations for control structures STR #3, #8 and #11 shown on Sheets C104 and C105.

13A: See sheets C115 and C117.

14Q: Confirm that the 47 lf of 8" PVC sanitary from MH #5 to existing MH #W-8 is to be installed by others. Also confirm that the offsite sanitary sewer system will be installed in advance so not to delay or hinder the utility work related to this project.

14A: The 47 LF of pipe is proposed to be installed by others. It is our understanding that the offsite lift station will be installed prior to our site being placed in to service. The City should confirm timing.

15Q: Verify that the extension of Children Way along with the water main will be complete in advance of this projects start date so access and water to the site will be available.

15A: It is our understanding that the offsite roadway and water main will be installed prior to our site needed to connect. The City should confirm timing.

16Q: Clarify the curb type at the parking lot drive from Children Way since the symbol on Sheet C104 implies that this may be something other than type "D". Also confirm that all curbing shown is type "D"?

16A: The curb at the entry is Type F curb. The remainder of the site is a mixture of Modified Type F and Type D curb as labeled.

17Q: Confirm that the City will pay the costs/expenses for meters, capacity fees, impact or usage fees, power company charges, and all other utility fees/charges.

17A: The City will pay associated costs for permanent meters for water and power meters and capacity fees. The selected contractor will be responsible for all costs associated with temporary water, wastewater, power, solid waste services during construction including consumption charges and fees.

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

Keith Raney, CPPB, CPPO
Contract Administrator II
Finance Department/Purchasing Division
4970 City Hall Blvd.
North Port, Florida 34286
Tel: 941.429.7103
Fax: 941.429.7173
E-mail: kraney@cityofnorthport.com

Receipt of Addendum No. 5 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.5

RFB NO. 2024-15 NORTH PORT UTILITIES ADMINISTRATION BUILDING

ATTACHMENT 1: INSURANCE REQUIREMENTS

Contractor and subcontractors shall procure and maintain until all of their obligations have been discharged, including any warranty periods under this Contract are satisfied, insurance against claims for injury to persons or damage to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or subcontractors.

The insurance requirements herein are minimum requirements for this Contract and in no way limit the indemnity covenants contained in this Contract. The City in no way warrants that the minimum limits contained herein are sufficient to protect the Contractor from liabilities that might arise out of the performance of the work under this Contract by the Contractor, his agents, representatives, employees, or subcontractors. Contractor is free to purchase such additional insurance as may be determined necessary.

LIMITS OF INSURANCE - Contractor shall provide coverage with limits of liability not less than those stated below. An excess liability policy or umbrella liability policy may be used to meet the minimum liability requirements provided that the coverage is written on a "following form" basis.

Requirements:

1. REVISED Commercial General Liability – Occurrence Form (CG 00 01)

Policy shall include bodily injury, property damage, broad form contractual liability and Explosion, Collapse and Underground (XCU) coverage. The general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.

The Contractor shall procure and maintain, and require all subcontractors to procure and maintain a comprehensive general liability policy, including, but not limited to

- General Aggregate \$1,000,000
- Each Occurrence \$1,000,000
- products and completed ops \$1,000,000
- damage to rented premises \$100,000
- fire damage \$100,000

- a) The policy shall be endorsed to include the following additional insured language: "City of North Port and its officers, employees, agents and volunteers" shall be named as an additional insured with respect to liability arising out of the activities performed by, or on behalf of the Contractor.
- b) Contractor's subcontractors shall be subject to the same minimum requirements identified above.
- c) Policy shall be endorsed for a waiver of subrogation against the City of North Port.

2. Commercial Automobile Liability

Bodily injury and property damage for any owned, hired, and non-owned vehicles used in the performance of this Contract. Automobile liability must be written on a standard ISO form (CA 00 01) covering any auto (Code 1), or if Contractor has no owned autos, hired (Code 8) and non-owned (Code 9) autos.

- Combined Single Limit (CSL) (Each Accident) \$1,000,000
 - Bodily Injury (per person) \$1,000,000
 - Bodily Injury (per accident) \$1,000,000
 - Property Damage (per accident) \$1,000,000
- The policy shall be endorsed to include the following additional insured language: "City of North Port and its officers, employees, agents and volunteers" shall be named as an additional insured

with respect to liability arising out of the activities performed by, or on behalf of the Contractor, including automobiles owned, leased, hired or borrowed by the Contractor".

- Contractor's sub-contractors shall be subject to the same minimum requirements identified in this section.
- Policy shall contain a waiver of subrogation against the City of North Port.

2. **Worker's Compensation and Employers' Liability (PER CHAPTER 440. FLORIDA STATUTES)**

The Contractor shall procure and maintain Worker's Compensation insurance for all his employees to be engaged in work on the project under this Contract and, in case any such work is sublet, the Contractor shall require the subcontractor similarly to provide Worker's Compensation insurance for all of the latter's employees to be engaged in such work unless such employees are covered by protection afforded by the Contractor's Workers Compensation insurance. For additional information contact the Department of financial Services, Workers' Compensation Division at 850.413.1601 or on the web at www.fldfs.com. In case any class of employees engaged in hazardous work on the project under this Contract is not protected under the Worker's Compensation Statute, the Contractor shall provide, and shall cause each subcontractor to provide, Employer's Liability Insurance for the protection of such of his employees not otherwise protected under such provisions. The minimum liability limits of such insurance shall not be less than herein specified or in that amount specified by law for that type of damage claim.

Proof of such insurance shall be filed by the Contractor with the City within ten (10) days after the execution of this Contract.

Workers' Compensation Employers' Liability

- a. Coverage pursuant to Florida Statutes, Chapter 440 must apply to all employees at the statutory limits provided by state and federal laws. The policy must include Employers' Liability with a limit of \$1,000,000 for each accident; \$1,000,000 for each employee; and \$1,000,000 policy limit for bodily injury or disease. Policy shall contain a waiver of subrogation against the City of North Port.
 - b. Contractor's sub-contractors shall be subject to the same minimum requirements identified in this section.
 - c. If the contractor has no employees, the contractor must submit to the City the Workers Compensation Exemption from the State of Florida.
3. **Builder's Risk Insurance for the Course of Construction or Installation Floater Insurance.** The policy must include the "All Risk" (Special Perils) coverage with limits equal to the completed value of the project; and must not include coinsurance penalty provisions.
4. **Umbrella/Excess Limits \$1,000,000**

GENERAL REQUIREMENTS:

A. The City of North Port is to be named additional insured on **Comprehensive Commercial General Liability Policy and Auto Policy**. All certificates of insurance must be on file with and approved by the City before commencement of any work activities under this Contract.

Any and all deductibles to the above referenced policies are to be the responsibility of the Contractor. The Contractor's insurance is considered primary for any loss regardless of any insurance maintained by the City. The Contractor is responsible for all insurance policy premiums, deductibles, or SIR (self-insured retentions) or any loss or portion of any loss that is not covered by any available insurance policy.

All insurance policies must be issued by companies of recognized responsibility licensed to do business in Florida and must contain a provision that prohibits cancellation unless the City is provided notice as stated within the policy. It is the Contractor's responsibility to provide notice to the City.

B. WAIVER OF SUBROGATION: All required insurance policies, with the exception of Workers

Compensation, are to be endorsed with a waiver of subrogation. The insurance companies, by proper endorsement or thru other means, agrees to waive all rights of subrogation against the City, its officers, officials, employees and volunteers, and the City's insurance carriers, for losses paid under the terms of these policies that arises from the contractual relationship or work performed by the Contractor for the City. It is the Contractor's responsibility to notify their insurance company of the Waiver of Subrogation and request written authorization or the proper endorsement. Additionally, the Contractor, its officers, officials, agents, employees, volunteers, and any Subcontractors, agrees to waive all rights of subrogation against the City and its insurance carriers for any losses paid, sustained or incurred, but not covered by insurance, that arise from the contractual relationship or work performed. This waiver also applies to any deductibles or self-insured retentions the Contractor or its agents may be responsible for.

C. POLICY FORM:

1. All policies, required by this Contract, **with the exception of Workers Compensation**, or unless specific approval is given by Risk Management through the City's Purchasing Office, are to be **written on an occurrence basis**, shall name the City of North Port, its Commissioners, officers, agents, employees and volunteers as additional insured as their interest may appear under this Contract. Insurer(s), with the exception of Professional Liability and Workers Compensation, shall agree to waive all rights of subrogation against the City of North Port, its Commissioners, officers, agents, employees, or volunteers.
2. Insurance requirements itemized in this Contract, and required of the Contractor, shall be provided by or on behalf of all subcontractors to cover their operations performed under this Contract. The Contractor shall be held responsible for any modifications, deviations, or omissions in these insurance requirements as they apply to subcontractors.
3. Each insurance policy required by this Contract shall:
 - a. Apply separately to each insured against whom claim is made and suit is brought, except with respect to limits of the insurer's liability.
 - b. Be endorsed to state that coverage shall not be suspended, voided or cancelled by either party except after notice is delivered in accordance with the policy provisions. The Contractor is to notify the City Purchasing Office by written notice via certified mail, return receipt requested.
4. The City shall retain the right to review, at any time, coverage, form, and amount of insurance.
5. The procuring of required policies of insurance shall not be construed to limit Contractor's liability nor to fulfill the indemnification provisions and requirements of this Contract. The extent of Contractor's liability for indemnity of the City shall not be limited by insurance coverage or lack thereof, or unreasonably delayed for any reason, including but not limited to, insurance coverage disputes between the Contractor and its carrier.
6. The Contractor shall be solely responsible for payment of all premiums for insurance contributing to the satisfaction of this Contract and shall be solely responsible for the payment of all deductibles and retentions to which such policies are subject, whether or not the City is an insured under the policy.
7. Claims Made Policies will be accepted for professional and hazardous materials and such other risks as are authorized by the City's Risk Office. All Claims Made Policies contributing to the satisfaction of the insurance requirements herein shall have an extended reporting period option or automatic coverage of not less than two (2) years. If provided as an option, the Contractor agrees to purchase the extended reporting period on cancellation or termination unless a new policy is affected with a retroactive date, including at least the last policy year.
8. Certificates of Insurance Evidencing Claims Made or Occurrences form coverage and conditions to this Contract, as well as the contract number and description of work, are to be furnished to the City's Purchasing Office (4970 City Hall Boulevard, Suite 337, North Port, FL 34286) prior to commencement of work AND a minimum of thirty (30) calendar days prior to expiration of the

insurance contract when applicable. All insurance certificates shall be received by the City's Purchasing Office before the Contractor will be allowed to commence or continue work. The Certificate of Insurance issued by the underwriting department of the insurance carrier shall certify compliance with the insurance requirements provided herein.

Bidders should carefully review their existing insurances and consider their ability to meet these requirements prior to submission. The requirements should be forwarded to their agent, broker, and insurance providers for review

Unless otherwise specified, it shall be the responsibility of the contractor to ensure that all subcontractors comply with the same insurance requirements spelled out above.

All certificates of insurance must be on file with and approved by the City of North Port Risk Division before the commencement of any work activities.

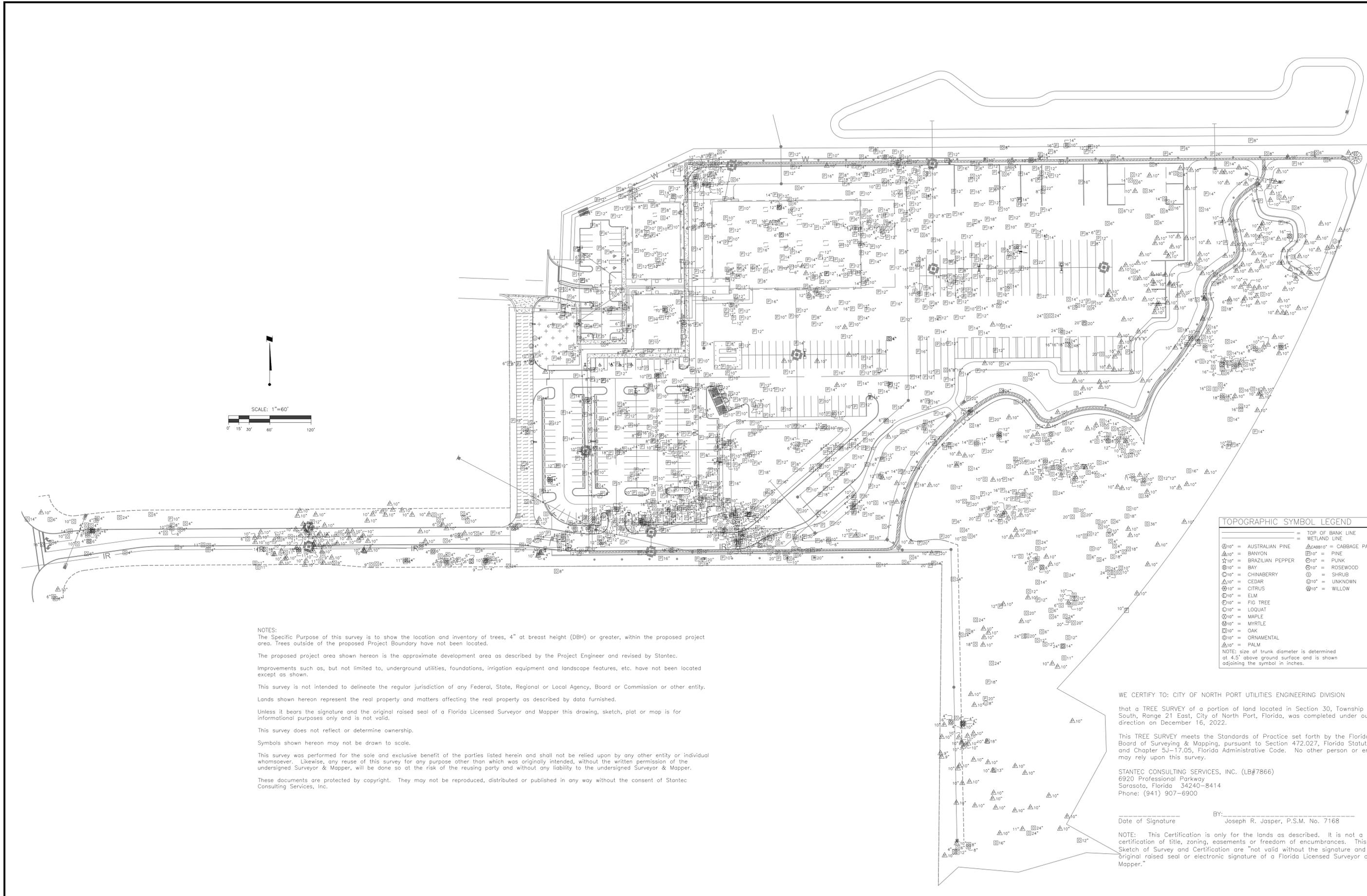
Bidder Statement:

We understand the requirements requested and agree to fully comply.

BIDDER'S NAME _____ **TITLE** _____

AUTHORIZED SIGNATURE _____ **DATE** _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED



SCALE: 1"=60'
 0' 15' 30' 60' 120'

TOPOGRAPHIC SYMBOL LEGEND	
—	TOP OF BANK LINE
- - -	WETLAND LINE
⊙10"	AUSTRALIAN PINE
⊙10"	BANYON
⊙10"	BRAZILIAN PEPPER
⊙10"	BAY
⊙10"	CHINABERRY
⊙10"	CEDAR
⊙10"	CITRUS
⊙10"	ELM
⊙10"	FIG TREE
⊙10"	LOQUAT
⊙10"	MAPLE
⊙10"	MYRTLE
⊙10"	OAK
⊙10"	ORNAMENTAL
⊙10"	PALM
⊙248B10"	CABBAGE PALM
⊙10"	PINE
⊙10"	PUNK
⊙10"	ROSEWOOD
⊙10"	SHRUB
⊙10"	UNKNOWN
⊙10"	WILLOW

NOTE: size of trunk diameter is determined at 4.5' above ground surface and is shown adjoining the symbol in inches.

NOTES:
 The Specific Purpose of this survey is to show the location and inventory of trees, 4" at breast height (DBH) or greater, within the proposed project area. Trees outside of the proposed Project Boundary have not been located.

The proposed project area shown hereon is the approximate development area as described by the Project Engineer and revised by Stantec.

Improvements such as, but not limited to, underground utilities, foundations, irrigation equipment and landscape features, etc. have not been located except as shown.

This survey is not intended to delineate the regular jurisdiction of any Federal, State, Regional or Local Agency, Board or Commission or other entity.

Lands shown hereon represent the real property and matters affecting the real property as described by data furnished.

Unless it bears the signature and the original raised seal of a Florida Licensed Surveyor and Mapper this drawing, sketch, plat or map is for informational purposes only and is not valid.

This survey does not reflect or determine ownership.

Symbols shown hereon may not be drawn to scale.

This survey was performed for the sole and exclusive benefit of the parties listed herein and shall not be relied upon by any other entity or individual whomsoever. Likewise, any reuse of this survey for any purpose other than which was originally intended, without the written permission of the undersigned Surveyor & Mapper, will be done so at the risk of the reusing party and without any liability to the undersigned Surveyor & Mapper.

These documents are protected by copyright. They may not be reproduced, distributed or published in any way without the consent of Stantec Consulting Services, Inc.

WE CERTIFY TO: CITY OF NORTH PORT UTILITIES ENGINEERING DIVISION

that a TREE SURVEY of a portion of land located in Section 30, Township 39 South, Range 21 East, City of North Port, Florida, was completed under our direction on December 16, 2022.

This TREE SURVEY meets the Standards of Practice set forth by the Florida Board of Surveying & Mapping, pursuant to Section 472.027, Florida Statutes, and Chapter 5J-17.05, Florida Administrative Code. No other person or entity may rely upon this survey.

STANTEC CONSULTING SERVICES, INC. (LB#7866)
 6920 Professional Parkway
 Sarasota, Florida 34240-8414
 Phone: (941) 907-6900

BY: _____
 Date of Signature: _____ Joseph R. Jasper, P.S.M. No. 7168

NOTE: This Certification is only for the lands as described. It is not a certification of title, zoning, easements or freedom of encumbrances. This Sketch of Survey and Certification are "not valid without the signature and original raised seal or electronic signature of a Florida Licensed Surveyor and Mapper."

REV. NO.	REVISION	DATE	DRAWN BY/EMP. NO.	CHECKED BY/EMP. NO.	FIELD BOOK/PAGE:	749/53	CHIEF:	WS

Stantec
 6920 Professional Parkway East, Sarasota, FL 34240-8414
 Phone: 941-907-6900 • Fax: 941-907-6910
 Certificate of Authorization #27015 • www.stantec.com
 Licensed Business Number 7866

TITLE: TREE SURVEY OF A PORTION OF LAND LOCATED IN SECTION 30, TOWNSHIP 39 SOUTH, RANGE 21 EAST CITY OF NORTH PORT, FLORIDA

DATE: 01/30/2023	CLIENT: CITY OF NORTH PORT UTILITIES ENGINEERING DIVISION
HORIZONTAL SCALE: 1"=100'	PAN AMERICAN BOULEVARD
VERTICAL SCALE: 1"=10'	CITY OF NORTH PORT, FLORIDA
CROSS REFERENCE FILE NO.	PROJECT NO.: 2270451002
TASK CODE:	SHEET NUMBER: 1 of 1
DRAWING/FILE NUMBER:	2270451002



City of North Port
FINANCE DEPARTMENT/PURCHASING DIVISION
4970 CITY HALL BLVD, STE 337
NORTH PORT, FLORIDA 34287
 Office: 941.429.7170
 Fax: 941.429.7173
 Email: purchasing@cityofnorthport.com



April 11, 2024
ADDENDUM 6

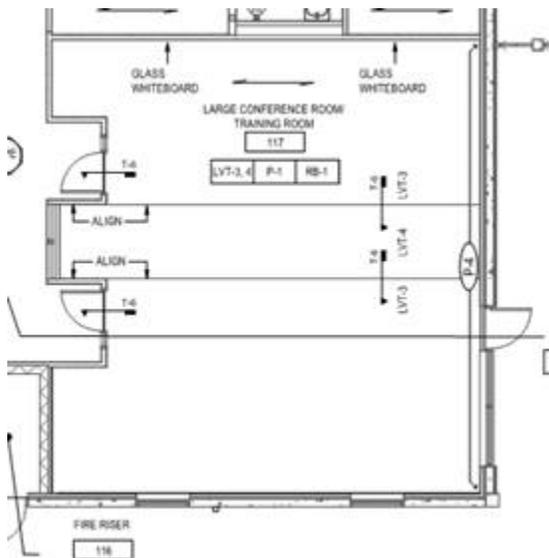
TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE APRIL 23, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

1Q.: I am working on our proposal for the North Port Utilities Administration Building, and I have a question regarding the finishes. The materials schedule on A641 includes selections for LVTs 1-3, however, there are some rooms such as 117 below that has an LVT-4. I wanted to confirm if that is to be a separate material, or an accent color of the same style as LVT-3? Any clarification I can get on this would be appreciated.



1A: See Addenda response 2.11. Drawings will be updated in future addendum drawing submission.

2Q: Verify the following Sections are sole sourced since only one manufacturer is listed. Alternatively provide a list of approved manufacturers, along with make/model, finish, accessories, options, etc.

- a. 07 42 13 Metal Wall Panels
- b. 07 42 43 Composite Wall Panels
- c. 07 54 00 Thermoplastic Membrane Roofing
- d. 08 11 13 Hollow Metal Doors and Frames
- e. 08 41 26 All-Glass Entrances & Storefronts
- f. 09 05 61 Common Work Results for Flooring Prep (1.6(B) 2 Acceptable Testing Agencies)
- g. 09 54 23.11 Exterior Linear Metal Ceiling System
Note: Although this section lists one approved manufacture, Sheet A200 specifies a different basis of design – Armstrong 7160 metal works linear 6” plank
- h. 10 22 39 Folding Panel Partitions
- i. 10 26 01 Wall & Corner Guards – Corner Guards, Wall Panels & Wall Caps
- j. 10 26 01 Wall & Corner Guards – Rubber Surface Mounted Bumpers in the warehouse area
- k. 10 51 29 Phenolic Lockers
Note: Although this section includes size, dimensions, etc., LK-1 shown on the drawings specifies a single tier 16” x 16” full height lockers
- l. 10 56 10 Industrial Storage Equipment
Note: Also clarify the specification(s) as to capacity/loading, since there are discrepancies in the schedule on Sheet Q000.

2A:

- a. **Specifications are basis of design only. Additional manufacturers and a substitution process will be added in a future addendum**
- b. **Specifications are basis of design only. Additional manufacturers and a substitution process will be added in a future addendum**
- c. **Specifications are basis of design only. Additional manufacturers and a substitution process will be added in a future addendum**
- d. **Specifications are basis of design only. Additional manufacturers and a substitution process will be added in a future addendum**
- e. **see addendum 2 12Q: D response**
- f. **1.6 (B)2b states other testing agencies approved by owner are acceptable.**
- g. **specification 09 54 23.11 to be updated in future addendum to provide Armstrong 7160 metal works linear 6" plank as BOD.**
- h. **Specifications are basis of design only. Additional manufacturers and a substitution process will be added in a future addendum**
- i. **Specifications are basis of design only. Additional manufacturers and a substitution process will be added in a future addendum**
- j. **Specifications are basis of design only. Additional manufacturers and a substitution process will be added in a future addendum**
- k. **Specifications are basis of design only. Additional manufacturers and a substitution process will be added in a future addendum**
- l. **"BS02 (3 LEVEL BULK RACK)- MINIMUM 2,000 POUNDS PER SHELVING. TOTAL STORAGE CAPACITY SHALL BE MINIMUM 6,000 POUNDS.**

PR01(PALEET RACK) - PER SPECIFICATION 10 56 10, MAXIMUM PALLET RACK CAPACITY SHALL BE 27,880 POUNDS. WIRE DECKING CAPACITY IS 2,778 LBS PER EACH. DESIGN TEAM SELECTED WIRE DECKING AS PRIAMRY DECKDING SYSTEM DUE TO FIRE SPRINKLER REGULATION. MAXIUM CAPACITY OF THE PALLET RACK SHALL BE LIMITED TO SUPPORT CAPACITY OF WIRE DECKINGS."

3Q: Verify the following material/equipment are sole source since only one manufacturer is listed in the Schedules on the plans. Alternatively provide a list of approved manufacturers, along with make/model, finish, accessories, options, etc.

- m. Sheet P600 Plumbing Fixtures, Heaters, Recirculating Pump, Valves, etc.
- n. Sheet FP600 Sprinkler Heads, Valves, etc.

3A:

- m. Plumbing fixtures and equipment listed are basis of design equipment. Substitutions can be made by following the substitution procedure included in the design manual.**
- n. Fire Suppression sprinklers and equipment listed are basis of design equipment. Substitutions can be made by following the substitution procedure included in the design manual.**

4Q: Provide a specification including approved manufacturers, along with make/model, finish, accessories, options, installation instruction, etc. for:

- o. Drain at the Rain Chain Basin per 3/A013.
- p. Air Barrier at TP1, TP2, TP3 and CW1 noted on Sheet A200.
- q. Building Management System.

4A:

- o. Rain chain specification to be included in future Addendum.**
- p. Provide fluid applied Class III vapor retarder applied to inside face of TP1, TP2, TP3, and CW1 at all user- occupied locations. Arch drawings to be updated and specification provided in future addendum**
- q. BMS specifications will be included in future Addendum.**

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

Keith Raney, CPPB, CPPO
Contract Administrator II
Finance Department/Purchasing Division
4970 City Hall Blvd.
North Port, Florida 34286
Tel: 941.429.7103
Fax: 941.429.7173
E-mail: kraney@cityofnorthport.com

**Receipt of Addendum No. 6 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.6**



City of North Port
FINANCE DEPARTMENT/PURCHASING DIVISION
4970 CITY HALL BLVD, STE 337
NORTH PORT, FLORIDA 34287
Office: 941.429.7170
Fax: 941.429.7173
Email: purchasing@cityofnorthport.com



April 11, 2024
ADDENDUM 7

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE APRIL 23, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

1Q.: Confirm there are no grant/funding sources (Federal, State, DOT, or other agencies) that would impose additional requirements, regulations, and reporting such as Davis Bacon/payroll reporting, strict Buy American Acquisitions, MBE/WBE, DBE, or labor surplus area participation, FAR's, etc.

1A: As noted during the prebid meeting, there are currently no grants associated with this project. No grants have been applied for this project as of this writing.

2Q: Confirm there is no percentage participation requirements for MBE/WBE, DBE, or labor surplus area.

2A: The request for bid document does not require percentage participation by MBE, WBE or DBE vendors .

3Q: Confirm the bid price is not to include permit costs, fees, and charges for site, building and utility(s). Alternatively, an allowance should be established by the City since these costs cannot be determined with accuracy prior to issuance of the permits.

3A: All known to be needed permits are in place for the project with the exception of the City of North Port Building permit. The City will pay for this permit.

4Q: Confirm that the City will approve payment for material and equipment properly stored and protected off-site and on-site since it is difficult to control fabrication, shipping, and delivery in the current economic environment.

4A: Please see Section 3.2 of the Request for Bids No. 2024-25 for the handling, storage and payment for stored materials.

5Q: Confirm that the City will accept schedules development using Microsoft Projects software. Alternatively, provide access (at no cost to the contractor) to the City's preferred software program.

5A: Schedules to be provided to the City will be in portable document format (pdf) and the selected contractor can use any standard project software of the their choosing to create the submission to the City.

6Q: Verify the contractor is not required to perform 60% of the work with its own organization and can subcontract portions of the project at their discretion. It is understood that the contractor will perform with its own employees all site supervision, project management, and administrative support.

6A: The selected contractor will not be required to self-perform sixty (60%) percent of the work.

7Q: Verify that a maintenance of traffic plan and ROW permits are not required.

7A: Right of way permits from the City of North Port are not required. Maintenance of traffic along Pan American Boulevard and Children's way shall be maintained. Any work in these areas may require maintenance of traffic if the selected contractor's work would impede or potentially impede traffic.

8Q: Confirm the bid price is to include costs (contingency) for fuel, material, equipment, and labor increases although they are volatile and cannot be accurately predicted.

8A: The City will not include an escalator clause for the reference items and bidders should be governed accordingly.

9Q: Provide a copy of the applicant's (Stantec) emergency access plans (EAP) for fire apparatus access including the route and design (to support minimum weight 40 tons) for the two (2) all-weather stabilized emergency access roads as outlined in the City's Development Order(s).

9A: "The Development Order has a condition of approval that states ""Emergency Access Plans (EAP) for Fire Apparatus Access shall be submitted for review and approval prior to commencement of all new construction as outlined in Florida Fire Prevention Code (FFPC), 7th Edition (NFPA-Fire Code, 2018 Edition), § 1:18.1.3 and § 60-10(A-C) of the City of North Port's Unified Land Development Code (ULDC)"".

The Contractor is required to prepare the Emergency Access Plan and provide said plan to the North Port Fire Department at the pre-construction meeting. The Plan is intended to show emergency access that ""shall extend to within one hundred (100) feet of the areas of construction and as such construction progresses, shall extend so as to consistently provide emergency access"". A copy of the code, ULDC 60-10(A-C), is attached.

10Q: Confirm the City will provide all material testing and inspections for soils, pavement and base, concrete, structural steel, joist, metal roof deck, windows/storefronts, etc.

10A: The selected contractor will provide all testing and inspections.

11Q: Will the City require the contractor to provide temporary fencing for the entire site including the drive off Pan American?

11A: Fencing is not required from a public safety/ client requirement standpoint. Construction fencing for site security is at the discretion of the general contractor.

12Q: Will the City require the contractor to install noise recording device(s) at the closest property line to monitor noise levels to confirm that noise levels established for the project are not exceeded. If so, provide a location for each device to be installed and a copy of the noise ordinance.

12A: NO

13Q: Since the contractor is responsible for performing the work including orchestrating all subtrade activities within strict time constraints, confirm that all float time accrues solely to the benefit of the contractor. It is important to note that the contractor is penalized/charged with liquidated damages for failure to complete the project on time and not rewarded for completing the project ahead of schedule.

13A: Confirmed. This Time is Maintained by the contractor.

14Q:Provide clarification as to the material content form per Section 01 33 29.04. Is this form required to be filled out and submitted for each and every separate material utilized on the project? Is this form to be approved by the City prior to ordering any material?

14A: LEED reporting not required. spec section are to be removed .

15Q:Confirm the bid price is to include a full-time on-site quality control system manager whose sole responsibility is to oversee the contractor's quality control program as specified per Section 01 45 00.

15A: LEED reporting not required. spec section are to be removed .A third party quality control manager not required.

16Q:Confirm the bid price is to include costs and expenses associated with the following.

- a. Sustainable Design Reporting – LEED V4.1 per Section 01 33 29.12
- b. Temporary Environmental Controls per Section 01 57 19 (Indoor Air Quality Control, Monitoring & Testing)
- c. AutoCAD As-Built Drawings for Site, On-site Utilities, and Building Construction per Section 01 78 39 Paragraph 1.2(E) 10
- d. Color Audio-Video Preconstruction Record per Section 01 80 50 taken along the entire length of the project
- e. Volatile Organic Compound (VOC) Content Restrictions per Section 01 61 16
- f. Construction Waste Management and Disposal per Section 01 74 19

Note: Paragraph 1.1 (D) 5 refers to Section 31 10 00 Site Clearing which is not included in the specifications

16A:

- a. LEED reporting not required. spec section are to be removed .**
- b. Confirmed**
- c. Confirmed**
- d. Confirmed**
- e. Confirmed**
- f. Spec section 31 11 00 - Clearing and Grubbing if provided and applies. Spec section 31 11 00 to be renumbered 31 10 00 in future addendum**

17Q: Confirm the bid price is not to include any cost or expense associated with a fire pump or any other apparatus to increase flow/pressure for the fire protection system. Confirm that the water main extension (installed by others) along Children Way will have adequate flow/pressure for both the fire protection and domestic water systems.

17A: "Stantec is in receipt of a hydrant flow test performed by the City of North Port on May 1st, 2023. The hydrant flow test was performed from hydrants 6-8-FH and 6-17-FH adjacent to the intersection of Pan American Boulevard and Trott Circle. The results of the hydrant flow test are as follows:

Static Pressure: 70 psi

Residual Pressure: 64 psi

Pilot Pressure: 55 psi

Flow: 1,244 GPM

Flow @ 20 psi: 3,910 GPM

Based on this information, additional pumps for domestic water and fire water are not anticipated given the 8" water service to site proposed."

18Q: Provide a target (percentage) for trash and debris generated by construction to be diverted from landfills since it is not specified in Section 01 74 19. Provide guidance as to the disposal of land clearing debris including the large number of trees and stumps since Section 31 11 00 Paragraph 3.07 and Note #2 on Sheet C112 implies that burning is allowed. Also confirm that the bid price is to include a separate on-site manager to implement, monitor, and enforce the waste management plan as specified per Paragraph 3.2.

18A: An on site manager must be designated but it can be a representative from the CM/GC team and does not need to be a third party.

19Q: Does the City have a designated disposal/dumpster company contractors are required to use? If so, provide a list of these approved companies.

19A: no required company. Contractor to choose .

20Q: Confirm that wall bumpers (BG-1) are not required on the gypsum board partitions at Rooms 175 and 176 exposed to the warehouse and loading dock areas as shown on Sheet A131C.

20A: Bumper guards are needed on the gypsum board partition facing Room 177, but not within Room 175 or 176. Drawings will be updated for future addendum submission.

21Q: Provide a specification for the air/vapor barrier at W1 and W2 (warehouse details) as shown on Sheet A200.

21A: At W1 and W2, provide foil faced batt insulation with taped joints. Drawing and specs to be updated in future addendum.

22Q: Provide clarification as to the exterior wall detail above SFB2 since Elevation 1/A203 and Section 1/A302 shows TP2 (7" tilt panel with metal cladding) whereas Details 1/A313 and 1/A322 specifies MP1.

22A: Use MP1. Elevation 1/A203 to be updated in future addendum.

23Q: Provide cabinet and/or countertop details for the item implied in Room 164 between Doors 164A and 164B shown on Sheet A101B since Sheet A131B notes this item as millwork "Type A".

23A: Elevation of casework to be included in future addendum submission

24Q: Confirm the bid price is not to include any cost or expense for moisture mitigation barrier/coating over the new concrete slab on grade, since remediation for high RH, pH, and moisture content cannot be predicted any earlier than when the actual testing is performed. Note: Section 09 05 61 implies that the contractor will be required to remedy any high RH, pH or moisture content prior to installing flooring material.

24A: RH must be acceptable to Flooring manufacturer prior to the installation of flooring materials. Any RH level above floor manufacturer requirements that requires mitigation is a GC means & methods issue.

25Q: Will steel pipe bollards be required at the 3 new fire hydrants, since none are shown on Sheet C106 or the enlarged detail plan sheets?

25A:NO

26Q: Confirm that the concrete ribbon curb/interface detail (including brick pavers) shown on Sheet C113 is not applicable since it is not shown on the site drawings. If required provide a location and a specification for the brick pavers.

26A: Confirmed N/A per current plan set.

27Q: Confirm that the portland cement concrete rigid pavement section shown on Sheet C113 is not applicable since there is none shown on the site drawings. If required provide a location.

27A: Revised plans where heavy duty concrete has been added for the dumpster pad and generator pad will be provided in future addendum.

28Q: Confirm that the FDOT Type C control structure shown on Sheet C115 is not applicable since it is not shown on Sheets C104 & C105. If required provide a location.

28A: The control structure detail shown on sheet C115 is applicable since it is for control structure #3.

29Q: Confirm that the typical "lake" section shown on Sheet C112 is not applicable to this project, since a lake is not shown on any of the site drawings. Alternatively, explain how the information in this lake detail/section applies to this project.

29A: The typical lake section is applicable to PONDS 1 & 2.

30Q: Provide a specification for the locker benches (TA-09).

30A: BOD: Hollman Oslo Bench with solid surface top in Designer White and stainless steel legs; Equivalent products are acceptable and will be reviewed during the submittal process.

31Q: Provide details including dimensions for the locker base and sloped tops as implied by the elevations, if required.

31A: Locker 4" base and sloped top provided by locker manufacturer. See manufacturer's specifications for details.

32Q: Confirm that Detail 4/A332 – opening at precast is not applicable. If required, provide a location.

32A: Not Applicable . Will be removed in future addendum

33Q: Confirm that the ¼" x 4"W x 13'4"H steel embed plate at the overhead door jams is required per Detail 3/A332 since this is unusual and is not shown on Sheet A611.

33A: ¼" x 4"W x 13'4"H steel embed plate not required. Detail 3/A332 to be updated in future addendum. Overhead door jamb to be bolted to face of concrete tilt wall

34Q: Provide clarification as to the meaning "Painted" wood roof blocking per Note 4 on Sheet A103C, since painted concealed roof blocking is not specified on any other sections or details. Is all wood roof blocking to be painted?

34A: note 4 to be revised in future addendum to note "fire retardant" in lieu of "painted"

35Q: Provide clarification as to the manufacturer for the metal roof panels since Section 07 41 13 lists only 3 approved manufacturers whereas Sheet A200 shows the basis of design as Morin Morzip MZ-18-2 which is not one of the specified products.

35A: Morin Morzip is the Basis of design and will be added to spec section 07 41 13

36Q: Confirm that the interior of the Warehouse Room 174 is unpainted exposed concrete tilt wall panels instead of metal framed drywall as implied by TP3 as shown on Sheet A200. Note: Detail sections on Sheet A313 and A314 do not show framed drywall.

36A: TP3 notes "Cold formed framing per interior partition types. See plans." In locations where there is no adjacent interior partition, confirmed TP3 is simply at 9.25" tilt panel wall. In rooms such as 180, 191, etc., provide insulation and interior partition

37Q: Confirm that the overhead coiling doors are factory prefinished in a manufacturers standard color.

37A: Confirmed

38Q: Provide section details with elevations and grades through on-site Pond #2 as shown on Sheet C105. Note: Although the drawings show the top of bank (TOB) at 12.00 there are no other elevations/slopes, grades, or bottom.

38A: The top of bank, normal water level, and bottom elevations are shown on the plans along with a typical cross section on sheet C113.

39Q: Provide a detail for the standard throat inlet coordinated with the Type 'D' curb since the detail on Sheet C115 shows valley curb/gutters which is not applicable to this project. Note: This affects STR# 12, 13, 14, 18, 20, 24, 25, 26, and 27.

39A: The inlets listed are within a Modified Type F (curb and gutter) section. Use the 5' transition to transition from Modified Type F to Type F curb.

40Q: Revise the Door Schedule on Sheet A611 since the head, jam and sill details do not accurately match up (coordinated) with the door locations in the tilt wall panels and gypsum board partitions. Note: As an example, Details 11 and 12/A612 shows hollow metal at CMU while there are none on this project.

40A: Door Schedule to be updated in future addendum

41Q: Provide a location for the foam-in-place insulation per Section 07 21 19 since the drawings do not show this product in the exterior framed walls, exterior wall crevasses, or at junctions of dissimilar wall and roof material. Also verify that the protective/overcoat intumescent coating is not a requirement although it is specified in this section.

41A: Foamed in place insulation to be used to fill miscellaneous voids, cracks and joints between dissimilar materials . Spec section to be revised in future addendum.

42Q: Confirm the 40 mil self-adhering vapor retarder per Section 07 26 00 is to be installed in conjunction with the metal wall panels and composite wall panels as implied by the drawing details. Note: Both Section 07 42 13 and 07 42 43 refer to related requirements Section 07 25 00 Weather Barriers which is not included in the specifications.

42A: Confirmed, self adhered vapor retarder to be provided at exterior stud wall construction. Arch details to be updated in upcoming addendum. Sections 07 42 13 and 07 42 43 will have the references updated to refer to 07 26 00

43Q: Confirm the gutters and downspouts are to be prefinished aluminum and not stainless steel since both are specified in Section 07 62 00. Also confirm the aluminum is prefinished in standard available colors instead of a "custom color".

43A: Provide pre finished aluminum gutter and downspouts using manufacturer standard colors. associated hardware to be stainless steel.

44Q: Confirm that cast iron downspout boots as specified per Section 07 62 00 Paragraph 2.4(D) are not required since none are shown on the drawings. If required provide a specification and details coordinated with the size of the downspouts and the underground storm drainage.

44A: Cast iron downspout boot included at all downspout locations. See downspout locations in architectural elevations. Architectural to update elevation sheets to note boots at each downspout

45Q: Confirm that interior hollow metal doors are to be field painted instead of factory finished as specified per Section 08 11 13 Paragraph 2.3(B) since this is unusual.

45A: Confirmed

46Q: Confirm the aluminum windows (storefront systems) require field testing by an independent laboratory per Section 08 51 13 Paragraph 3.4(C) prior to 5%, 50% and 90% completion of this work.

46A: Confirmed

47Q: Verify that pocket enclosures for the folding panel partitions per Section 10 22 39 Paragraph 2.2(G) is not required since it is not shown on Sheet A101A.

47A: Confirmed. Spec section to be revised in future addendum

48Q: Confirm that battery operated fire extinguisher cabinet theft alarms are not required although Section 10 44 00 Paragraph 2.4(B) indicates that they are to be "monitored in the CCFM operation center using the existing card access system".

48A: This is not required and will be deleted from future addendum

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

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Receipt of Addendum No. 7 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.7



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April 11, 2024
ADDENDUM 8

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE APRIL 23, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

1Q.: Provide a specification and design for the 6' precast privacy wall ("green" per legend) added along the north and south property lines as shown on Sheet C103 issued under Addendum #1. Specification/design should include a list of approved manufacturers, post size and spacing, panel size and thickness, reinforcing, finish, installation instructions, etc.

1A: Basis of design is Permacast boundary fence wall systems or equal. Specification to be provided in future addendum

2Q: Provide a specification and design for the decorative fence ("blue" per legend) added along the west part of the project as shown on Sheet C103 issued under Addendum #1. Specification/design should include a list of approved manufacturers, gates and motor operators (if required), height, post size and spacing, fabric, top/bottom rails and/or pickets, finish, installation instructions, etc.

2A: See specification section 32 31 36

3Q: Provide a specification and design for fence ("----O-----" per legend) added along the east side of the dry pond as shown on Sheet C103 issued under Addendum #1. Specification/design should include a list of approved manufacturers, gates, height, post size and spacing, fabric, top/bottom rails and/or pickets, finish, installation instructions, etc.

3A: This fence is to also use specification section 32 31 36

4Q: Provide irrigation design drawings for landscape planters and grassed areas including specifications for piping, valves, heads, drip lines, controller, rain sensor, etc.

4A: Irrigation plans will be provided in future addendum

5Q: Provide landscape drawings outlining the limits for Bahia sod, seed/mulch and hydroseeding since it is not shown on the drawings issued under Addendum #1. Note: The schedule on Sheet LP601 specifies only 6 sf of Bahia sod. Should both sides of the access drive off Pan American Blvd be sodded and irrigated?

Should the banks and bottom for Pond #2, flood plain compensation area and the dry pond areas shown on Sheet C103 be sodded and irrigated?

5A: Landscape plans previously released in addendum 2 will be revised to show correct limits of Bahia sod in future addendum. Lake bank / dry pond area Bahia sod is accounted for in the civil drawings. See sheet C113. Bahia sod is not intended to be irrigated.

6Q: Confirm that all trees per the Plant Schedule on Sheet LP601 issued under Addendum #1 require a root barrier (24" deep, 20' length per 8/LP501) since all are approximately 5' +/- from curbs, fences, walks, and underground utilities.

6A: None of the trees on the Plant schedule require root barrier per detail 8/LP501. Detail will be removed from the landscape drawings in a future addendum

7Q: Provide details, dimensions, and specifications for the material added around control structure STR#8 as implied by the markings around this structure per Sheet C103 issued under Addendum #1.

7A: The plans previously showed rip-rap around this structure. There were no additions to this structure with Addendum 1.

8Q: Provide the bolt size, type and spacing for the roof wood Nailer attached to the steel angle per 1/A321. Note: Shop predrilled holes are not shown on the structural drawings. Also provide fastening (bolted) details for the roof wood Nailer to the steel angle per details 2, 3, & 4/A321.

8A:

At the upper soffit (detail 1/A321, provide 1/4" lag screws at 12" O.C. at top and bottom angles. Provide minimum 2" cover. At lower soffit (detail 2/ A321) provide two rows 1/4" lag screws at 12" on center horizontally, staggered 6", with a 2" vertical gage. At gable ends (details 3 & 4/A321, provide 1/4" lag screws at 12" O.C., centered vertically on blocking

9Q: Provide specifications for the exterior sheathing and insulation related to the metal roof panel CP1, MD1, and MD2 on Sheet A200 since they are not included in Section 07 41 13. Note: Exterior sheathing is not included in Section 06 10 00 – Rough Carpentry and roof insulation is not included in Section 07 21 00 – Thermal Insulation.

9A: Exterior sheathing is present in section 09 21 16. Continuous wall insulation to be mineral wool board . Roof insulation to be polyiso. Drawings and specs to be updated in future addendum .

10Q: Provide a specification for Door 191 since it is not in the Door Schedule on Sheet A611.

10A: door 191 will be added to door schedule in future addendum

11Q: Provide a location for the cased openings 158A, 158B, 159A, and 159B shown in the Door Schedule on Sheet A611 but not indicated on Sheet A101B or 5/A503.

11A: Doors & cased openings will be tagged for rooms 158 & 159 on sheet A101B in future addendum.

12Q: Provide clarification since Sheet A101B shows 2 doors with the same number 117C. Note: The Door Schedule on Sheet A611 shows Door 117C as an exterior AL/GL and no interior door for the IT Closet.

12A: Door 117C is on sheet A101A, not A101 B. Keep 117C at IT closet (room #117C); Change door 117C within room 117 to 117D. 117D to be AL/GL exterior door type. Door 117C to be similar to door 135. plan and door schedule to be updated in future addendum.

13Q: Provide clarification as to the need or requirement for an interior air barrier at the tilt-wall panels since TT1 and BT1 on Sheet A601 does not specify any, whereas the details on Sheet A200 show an air barrier over the rigid insulation.

13A: Walls tagged w1 1 in sector c are demising an interior conditioned space from an adjacent unconditioned warehouse and require an air/vapor barrier. Use assembly W1 as detailed on sheet a 200 . Details #1 and b#1 to be removed in future addendum.

14Q: Provide clarification as to the interior wall type at Room 176 since Sheet A101C designates both walls as B31 which per Sheet A601 shows one side gypsum board to 6" above finish ceiling with studs to the high warehouse structure above.

14A: Interior wall type at room 176 to be revised in a future addendum

15Q: Can you tell me if a synchronized clock system or critical notification system is being considered as part of the scope of work for this project?

15A: Time clock system to be provided by owner.

16Q: Will this project be awarded as lump sum contract or unit price?

16A: lump sum

17Q: Whose responsibility is it to verify in place quantities on the schedule of values?

17A: See addendum 1 Q22 . Quantities in the schedule of values are provided as reference only. Bidders should perform their own quantity take offs. Bids do not require detailed unit prices for each takeoff in detail tabs.

18Q: Is it the contractor, owner or owner consultant / engineers responsibility?

18A: Questions is unclear

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

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Receipt of Addendum No. 8 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.8



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April 11, 2024
ADDENDUM 9

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE APRIL 23, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

1Q.: *Div 274100 specs room names/numbers do not match the E400 series of drawings. Can these be clarified?*

1A: This will be clarified in a future addendum.

2Q: *Div 274100 specs list TV sizes to be as described on the E400 series of drawings however no TV sizes are shown. Can these be clarified?*

2A: Architectural drawings will denote TV sizes in a future addendum.

3Q: *Div 274100 specs list AV system speaker quantities to be as described on the E400 series of drawings however no TV sizes are shown. Can these be clarified?*

3A: There are no AV speakers in this project - please disregard spec section

4Q: *Div 274100 specs do not list control touch panel functionality. Can these be clarified?*

4A: There are no control touch panels in this project - please disregard spec section

5Q: Attachment 13: Trench Safety Act Item 1 shows Bid No.: 2023-33 for the construction of Traffic Signals at Price Blvd. and Entrances to North Port High School and Heron Creek Middle School. It appears that the project information on this form was not changed to be project specific. Are we to submit Attachment 13 that was provided in the original bid documents although it has the incorrect project information listed or will the City issue a revised corrected Attachment 13?

5A: See Attached Revised Form

6Q: Sheet A202 (Shown in the Index) appears to be missing from the bid package. Please provide.

6A: Will be provide in future addendum

7Q: The provided Civil set, 1Q Final Plans, is a pdf copy with an edit label applied. If you would, please provide an original, unmarked, pdf copy of this Final civil file set. For whatever reason, when these

modified drawing sheets are imported into On-Screen Take-off software, resolution of the fine text comes out distorted.

7A: In the interest of avoiding confusion, we are not re-releasing entire drawing sets for convenience. The AHJ stamps are not locked and can be deleted from the set prior to loading in to your chosen post processing software



Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

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Receipt of Addendum No. 9 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.9

ATTACHMENT 13:
SWORN STATEMENT: THE FLORIDA TRENCH SAFETY ACT
(If applicable)

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC BY AN OFFICER AUTHORIZED TO ADMINISTER OATHS.

1. This Sworn Statement is submitted with Bid No. 2024-15 for the construction of the North Port Utilities Administration Building
2. This Sworn Statement is submitted by _____ whose business address is _____ and (if applicable) its Federal Employer Identification Number (FEIN) is _____.
3. My name is _____
(PRINTED OR TYPED NAME OF INDIVIDUAL SIGNING) and hold the position of _____ with the above entity.
4. The Trench Safety Standards that will be in effect during the construction of this Project are Florida Statute Section 553.60-55.64, Trench Safety Act, and OSHA Standard.
5. The undersigned assures that the entity will comply with the applicable Trench Safety Standards and agrees to indemnify and hold harmless the County and ENGINEER, and any of their agents or employees from any claims arising from the failure to comply with said standard.
6. The undersigned has appropriated \$ _____ per linear foot of trench to be excavated over 5' deep for compliance with the applicable standards and intends to comply by instituting the following procedures: _____
7. The undersigned has appropriated \$ _____ per square foot for compliance with shoring safety requirements and intends to comply by instituting the following procedures:
8. The undersigned, in submitting this Bid, represents that he or she has reviewed and considered all available geotechnical information and made such other investigations and tests as he or she may deem necessary to adequately design the trench safety system(s) he or she will utilize on this Project.

Sworn to and subscribed before me
this _____
(date)

Authorized Signature/Title

Notary Public Signature

(Notary Seal)

My Commission Expires: _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED



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April 12, 2024
ADDENDUM 10

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE APRIL 23, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

1Q.: Clarify the thickness of the tilt wall panels at the warehouse area since TP3 on Sheet A200 shows 9.25" whereas Sheets S100B and S100C for Sectors B and C specifies 12" tilt panels.

1A: Tilt Up panel thicknesses will be larger in Area C due to the panel heights and openings within the walls. Structural and Architectural drawings have been coordinated in the next Addendum to specify the following wall thicknesses in Area C: 9.25" on Grid 7 and 11.25" on Grids T, Y and 13. Ultimately, the panel designs are the responsibility of the GC's tilt-up subcontractor, and therefore bidders shall verify these target panel thicknesses with their tilt-up subcontractor prior to pricing the work. Increased panel thickness requirements should be carried and clarified in the GC's bid.

2Q: Provide reinforcing steel (rebar) design for the concrete tilt wall panels showing bar size, spacing, number of layers, special or added reinforcing at openings, etc.

2A: This is a Deferred Submittal item to be completed by a Delegated Engineer per our Structural Notes.

3Q: Confirm there are no recessed and grouted tilt wall connections as implied by the many different details on Sheet S420. Provide a drawing showing the specific locations for the different connection details shown on Sheet S420 since there does not appear to be any mitered corners or interior square corners. Note: Details 5 and 6 on Sheet A332 show surface panel connections.

3A: Joint details are typical for all the possible configurations. Final joint configurations and joint spacing (i.e. panel sizes) will be coordinated by the Delegated Engineer of the tilt up panels and included in those shop drawings. If the architect shows exposed surface connections at the interior, those are structurally acceptable as long as they are not in conflict with any finishes.

4Q: Confirm that all tilt wall panel joints are to be connected by steel embeds and welded plates per 3/S420 since this is unusual for all joints to be welded together.

4A: We defer to the Delegated Engineer of the tilt up panels for final panel-to-panel connection requirements.

5Q: Provide a base plate schedule for the steel columns showing the size, thickness and anchor bolt type and size since the information on Sheet S300 is incomplete and unclear.

5A: This information will be provided in a future Addendum. See RFI 1.15.

6Q: Provide a steel column schedule showing the location, size, type, length/elevations, etc.

6A: Steel column sizes are shown on the foundation plans.

7Q: Confirm there are no sealants required at the slab on grade joints per 3/S400 since the note refers to "where required by Architect" and none are shown on the architectural drawings. If joint sealants are required, provide specific design and locations.

7A: Sealants are not required at the slab joints other than what is provided by structural. The exposed concrete slabs will be sealed. Architectural finish plans note floor finish SC-1. Architectural to provide a finish spec for this floor finish.

8Q: Provide architectural drawings with details for the roofing over the 1 ½", 20-gauge, type 'B' galvanized metal roof deck for both the covered parking and pipe town canopies as referenced per Note 1 on Sheet S121.

8A: Architectural drawings will be updated to provide details or canopy roofing in future addendum

9Q: Provide the height for the 24" dia. concrete steel column encasement at the covered parking canopy per detail 11/S300 since it is not shown on the architectural drawings.

9A: Provide 36" tall concrete column encasements at covered parking canopies.

10Q: Provide the height for the 18" sq. concrete steel column pedestals at the pipe town canopy per 10/S300 since it is not shown on the architectural drawings.

10A: Concrete pedestals should match the height of the adjacent wall.

11Q: Provide the top of wall elevation for the cast in place concrete walls for the yard storage area per 2/S120 since it is not shown on the architectural drawings. Note: 2/S120 structural design shows 10' 0" maximum. Also provide a top of footing elevation(s) and dimensions for the footings and wall locations since it is not shown on Sheet S120.

11A: Top of footings shall be a minimum of 1'-0" below grade per Detail 2/S-120. Coordinate adjacent grade elevations with Civil drawings. Depth to top of footing shall not exceed 2'-0" max. Footing sizes are tagged on plan and the wall footing schedule is in the drawings. Top of wall elevation at CIP walls to be 8'-0" above grade.

12Q: Confirm the cast in place concrete walls at the yard storage per Sheet S120 is unpainted exposed concrete. Alternatively, provide a specification and details if these walls are to receive any type of finish.

12A: Cast in place walls at yard to be painted to match tilt panel wall. Arch drawings to be updated in future addendum .

13Q: Provide clarification as to the wall and ceiling assemblies at Rooms 180 and 191 since W1 and W2 on Sheet A200 and Details 1 and 2 on Sheet A505 do not show fire rating whereas Sheet G101 depicts the walls as 1 hr. rated. Note: Although Door 191 is not shown in the Door Schedule should this door be rated also?

13A: Room 180 walls to be 1HR Rated. W1 and W2 assemblies and associated details to be updated to provide 1 HR rating. Room 191 will use the same assemblies for simplicity but do not require rated penetrations or door.

14Q: Provide clarification as to the details for the edge of the metal roof deck along the entire length of column lines 7 and 13 at Sectors B and C and column lines A, E, F, and L at Sector A since 3/S511 shows "12-gauge minimum continuous deck angle by roofer" whereas details 3 and 4/A321 specifies a steel angle. Provide the steel angle size and shop predrilled hole spacing for the wood blocking bolted connection.

14A: Decking angle per structural is sufficient at gable ends

15Q: Provide a dimensionally accurate architectural detail through the low end of the roofs along column line 3 at Sector A and along column line T at Sector C, since 2/S511 shows an 8 ½" x 6" bent plate at the roof deck shear collector creating a large 3" gap from the top of the tilt wall panel to the bottom of the roof deck that is not correctly depicted in 2/A321.

15A: Detail 2/511 omits the bar joist for clarity. See details 2&6 S/512 for details showing the bar joist tails running continuously past the face of the tilt wall panel, and filled with spray foam insulation per 2/A321.

16Q: Provide a simplified wood blocking detail for the coping at the cast in place concrete parapet along column line 4 between T.5 and T.9 since 4/A322 shows a 3 to 4 step process with cast in place 'J' bolts and insulation sandwiched between 2 layers of plywood. As a cost savings alternative, would a simple 2x attached to the concrete using ½" expansion bolts be acceptable?

16A: Design optimization & value engineering will be considered during construction with a chosen contractor. Please provide a bid per detail 4/A322 on this minor length of parapet.

17Q: Provide make/model, etc. for each of the toilet accessories since it is not shown on the enlarged toilet room drawings and not included in Section 10 28 00.

17A: Drawings will be updated in future addendum

18Q: Although not shown on the drawings, should diaper changing stations and utility room accessories be added, since they are the only items specified in Section 10 28 00? Provide the length for the 2 different grab bars identified as TA-22 and TA-23. Also confirm that there are no toilet accessories required at the sinks in the handicap stalls at Toilet Rooms 137 and 139 per Sheet A502 and Toilet Rooms 158 and 159 per Sheets A503.

18A: See sheet G012 for all grab bar dimensions. Sheet A502 and A503 will be updated to show a soap dispenser and wall mounted paper towel dispenser at handwash sink within handicap stalls. Confirmed diaper changing stations not required. Updated sheets will be submitted in future addendum.

19Q: Verify that the General Notes on Sheet G013 do not conflict with any of the specification sections.

19A: If conflict exists, the more stringent governs.

20Q: Verify that the Structural Notes on Sheet S000 do not conflict with any of the specification sections. Also confirm the bid price is to include 5 additional tons of reinforcing bars per Note 8 under reinforced concrete. Note: Under the General Notes on Sheet S000 does not include any seismic performance and design criteria.

20A: If conflict exists, the more stringent governs. Yes bid price should include an allocation for additional reinforcement and then credit back to the Owner whatever is not used. This project is not in a seismic region.

21Q: Are we able to do a site visit?

21A: Not a formal site visit, that was offered after the pre-bid meeting with no takers. However, the site is open but heavily vegetated.

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

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Receipt of Addendum No. 10 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.10



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April 12, 2024
ADDENDUM 11

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE APRIL 23, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

1Q.: I did notice, on the specs, the room numbers for the a/v equipment list do not match up with the room numbers on the floor plans.

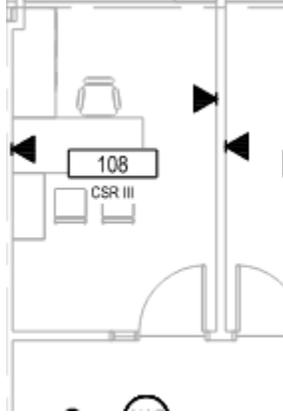
For example:
In specs, the room and equipment list are as follows:

2.4 AV SYSTEM TYPE 1: CONFERENCE ROOM

- A. Refer to drawings for identification of Conference Rooms to receive the AV System Type: Rooms A108, A222.
- B. Basis of Design Equipment List:

Line	System Component	Description	Basis of Design	Qty	Unit
1	System Displays				
2	Flat Panel Display	Flat panel commercial display, UHD resolution, nominal 65", 75", 86", or 98" diagonal. Refer to drawings for size.	NEC C651Q, NEC C751Q, NEC C861Q, NEC C981Q, or Samsung Commercial grade, LG Commercial grade	1.00	EA

However there is no A108, or A122. The only room 108 was an office with no AV.



1A: See addendum 9, Question 1 response

2Q.:Sheet C103. Provide the extent and construction details of the “Push Wall” located near “Pipe Town”.

2A: See structural drawings for details on these walls. See also RFI 10.11

3Q: Please provide “Bid Schedule in Excel Format” as described on Attachment 2 of the solicitation.

3A: Bid form was provided with the original documents.

4Q: A641 Interior Materials Schedule. Window Treatment WT-1 refers to Finish Floor plans for locations. Finish plans A131-A131C don’t appear to show any WT-1 designations. Are roller shades to be included in the scope of this contract? If so, please provide quantity and sizes.

4A: No roller shades to be included in scope of this contract. See response to addendum 2, question 16.

5Q: Sheet A131A. Please confirm that a walk-off mat (WM-1) is intended to cover the entire Lobby & Customer Vestibule, room 100.

5A: Confirmed

6Q: Please provide a Finish plan for the mezzanine level in warehouse sector C.

6A: See General Notes - Finish Plan on Sheet A131 for all typical finishes. Concrete equipment platform to be sealed concrete.

7Q: I received the electrical floor plans, however for AV I noticed the equipment list in the specs does not line up with the room numbers on the floor plan.

For example:

In the specs, section 27 41 00, 2.4: The AV equipment list in Rooms A108, A222 are listed. On the floor plans there are no rooms with that number. All the others are the same way. The rooms on the plans do not begin with a letter.

Can someone please clarify if the rooms listed in the specs are correct as far as AV equipment, and which room # it should be on the plans?

7A: See addendum 9, Question 1 response

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**Receipt of Addendum No. 11 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.11**



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April 12, 2024
ADDENDUM 12

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE APRIL 23, 2024 AT 2:00 P.M.

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1Q.: Please provide CAD files for the civil drawings.

1A: CAD files to be provided with updated plan sets.

2Q: Can you provide a planholders list of the companies that are requesting the exempt plans?

2A: See Attachment issued with this Addendum

3Q: Please advise which building management system the owner requires. Plans and specifications call for one; however, none is provided in the plans or specifications. Provide manufacturer and controls/instrumentation.

3A: BMS Specification will be provided in future addendum. See Question 6.4q

4Q: Please identify/label which areas will take Bahia sod on sheet LP101.

4A: Landscape drawing to be updated in future addendum. See Question 8.5

5Q: Please advise what type of planting/sod will be placed in the garden area.

5A: The garden area is to be sodded (Bahia Grass) and included in the bid estimate.

6Q: Please advise if sodding will be placed around pond #2.

6A: Yes, sodding should be placed per the typical lake detail. Additionally, sod should be placed between the lake and parking areas.

7Q: Please define edge treatment for the new walking trail.

7A: There is no proposed edge treatment.

8Q: Will sod be need on both sides of floodplain compensation area for stabilization.

8A: Yes, please bid sod per the updated cross section on sheet C105.

9Q: Please confirm the domestic water supply & proposal shall include sleeves to install drip zones to planting areas only.

9A: Reclaimed water will be used for irrigation. Please bid sleeves per the irrigation plans.

10Q: Please provide details/specs for the gazebo.

10A: Gazebo has been eliminated from the project .see Q1.9

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End of Addendum No.12



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April 12, 2024
ADDENDUM 13

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE APRIL 23, 2024 AT 2:00 P.M.

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- 1Q.: Addendum #2, response to Question #4 requires more information for the trash/dumpster enclosure.
- Layout (dimensional location) and quantity for the interior and exterior pipe bollards is needed since it is not shown on Sheets A101 – A101C or 3/S121.
 - Confirm that the ground face CMU is to be unpainted standard gray. Also, should both the interior and exterior be painted or left unfinished?
 - How should the 12" x 12" cast in place columns and 8" x 16" tie beam as shown per 3/S121 be finished? Alternatively, should these details be changed utilizing ground face CMU ?

1A: see Addendum 2 question 5C response .

- Bollard locations shown on sheets A101 - A101C.**
- Confirmed. CMU to be left unpainted. Ground face on the exterior. Smooth face on the interior**
- Please paint these concrete columns to match the tilt wall and sites walls. See finish specification on A200**

2Q: Addendum #2, response to Question #5 requires more information, since Sheet A661 does not include approved manufacturers for the signage and does not clearly define the material or the City's graphic standards (per Note #7) for each of the different types of interior and exterior room signs, acrylic numbers, and metal letters.

2A: Exterior signage materials are provided on sheet A661. Interior sign materials will be noted in upcoming addendum. Signage graphics will be coordinated during construction via shop drawings.

3Q: Addendum #2, response to Questions #6(f) requires more information for the service and teller window units.

- Details 1 and 10/A510 and 3/A801 does not match up with Section 08 56 59, Paragraphs 2.2 and 2.6.
- Provide the width and height for each window unit.

- c. Provide detail(s) for the counter/shelf incorporating the pass-through drawer mounted below the window.
- d. Provide detail(s) for the integrated intercom system including the related electrical design. Note this is not shown on the electrical drawings.

3A:

- a. spec section and drawing to be updated in future addendum**
- b. Drawings to be updated in future addendum**
- c. spec section and drawing to be updated in future addendum**
- d. Coordination and details provided in future addendum**

4Q: Addendum #2, response to Question #6(g) requires clarification since Section 08 83 00, Paragraph 2.2(A) and (B) specifies special laminated glass mirrors which is unusual for typical metal framed toilet accessory mirrors in restrooms. Is TA-12 per the enlarged restroom details to be a standard manufactured toilet accessory item or special laminated mirrors.

4A: Section 08 83 00 is intended for custom full width mirrors. Section will be deleted. Drawings will call for a standard manufactured product.

5Q: Addendum #2, response to Question #6(m) requires clarification since Sheet C103 shows only 2 benches along the fence line at the dry pond and no other site furnishings such as tables, recycle and waste receptacles as outlined in Section 32 33 00. Is it correct that site furnishings are limited to only 2 benches?

5A: Additional site furnishing (picnic table) has been added to sheet C103.

6Q: Addendum #2, response to Question #11(e) requires more information since Section 11 30 13 does not include specifications for the ice machines, microwaves over the range, ranges, water dispensers, and coffee makers. Are these appliances furnished by others and not to be included in the bid price?

6A: Appliance specifications to be updated in future addendum

7Q: Addendum #2, response to Question 18 requires more information since there is not a local metal fabricator that can comply with all the requirements outlined in Section 11 11 36 for the two 8' work benches.

- a. Provide design details for the steel fabricated benches including legs, leg braces, top braces, top, base plates, seismic restraints, etc.
- b. Confirm these benches must comply with "Buy American", all references, action submittals, informational submittals, and 2-year warranty per Paragraph 1.2(B) through (K).
- c. Confirm that independent testing and inspections are required per Part 3, Paragraph E.
- d. Is it acceptable that these steel work benches can be fabricated by a local shop without complying with the numerous requirements included in Section 11 11 36? Alternatively, provide a basis of design manufacturer as implied per Part 2, Paragraph F(2).
- e.

7A: "Basis of design is Uline/H-3626 "

- a. See above**
- b. Buy American is not required on this project. Specifications sections will be updated**
- c. See above**
- d. See above**

8Q: Addendum #3, response to Question #6 requires more information for the primary power conduits and duct bank since FPL through Stantec has not provided the design/engineering for the exact route so a complete and accurate price can be developed for this work. Provide the length of primary power duct bank that is to be included in the bid price.

8A: INCOMING DUCTBANK FROM UTILITY TRANSFORMER SHALL EXTEND TO FINAL POWER POLE ON CHILDRENS WAY. REFER TO SINGLE LINE DIAGRAM FOR NUMBER OF CONDUITS. PROVIDE UNIT COST PER LINEAR FOOT FOR THIS PORTION OF THE PROJECT. FINAL CONFIRMATION OF DUCTBANK ROUTE, WIRE SIZE, AND CONDUITS

SHALL BE CONFIRMED WITH FPL. COORDINATE EXACT ROUTING DETAILS WITH FPL, OWNER, AND CIVIL ENGINEER PRIOR TO INSTALLATION

9Q: Addendum #3, response to Question #9 requires more information for the fiber optic conduit and cable to be included in the bid price since Sheet E201 does not accurately show the route or location for this utility. Provide the length of fiber optic conduit and cable to be included in the bid price.

9A: See attached Fiber Plans and Bore Logs for city owned fiber cable in Pan American Boulevard. Note 28.6 on sheet E201 will be revised to state (3) 4" UNDERGROUND CONDUIT RUNNING FROM FINAL POWER POLE ON CHILDRENS WAY TO IT MDF ROOM 135. FROM THIS POINT EXTEND (1) 2" DIRECTIONAL BORE w/ 48 STRAND SINGLE MODE FIBER CABLE AND SPLICE TO CITY OWNED DARK FIBER CABLE IN PAN AMERICAN BOULEVARD VIA HAND HOLE NEAR INTERSECTION OF PAN AM AND CHILDRENS WAY. COORDINATE EXACT ROUTING DETAILS WITH COMMUNICATIONS UTILITY COMPANIES, OWNER, AND CIVIL ENGINEER PRIOR TO INSTALLATION.

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End of Addendum No.13

Contractor	Accepted Invitation
Seagate Development Group, LLC	X X is accept
Stellar Development Inc	X O is they h
DEC Contracting Group, Inc	X
Wharton Smith, Inc.	X
Alpa Omega Communications	X
Rycon Constuction	X
Advanced Cable Connections, Inc	X
APG Electric, Inc.	X
AGT Construction Services, Inc	X
HBS Drywall, LLC	X
Wiginton Corporation dba Wiginton Fire Systems	X
CTI Construction Testign & Inspection, Inc.	X
Quality Cabinets and Counters, Inc.	X
Construction Technology Group, Inc.	X
OFDC Commercial Interiors	X
Hanlon Acoustical Ceilings	X
Precision Service & Installation	X
Florida Service Painting dba Service Contracting Solutions	X
Redeye Doors Specialists	X
Southwest Concrete & Masonry Systems	O
Power Air Conditioning, Inc	X
DuraServ Corp DBA Action Automatic Door & Gate	X
Suncoast Commercial door and Hardware	X
Commercial Residential Aluminum and Fabrication	X
Arrow Exterminators dba Hughes Exterminators	X
East Coast Metal Structures	X
Steel Fabricators, LLC	X
S.E. Bates Electric Inc.	X
Ellis Van Pelt, Inc.	X
Nu Sons Electric	X
Five T Co	X
Suncoast Industries of Florida	X
Big River Roofing	X
Montgomery Cabinetry Company	X
Oaktree Consulting LLC dba Charlotte Plumbing	X
Commercial Fire and Communications, Inc.	X
Jansen & Sons InsulationLightning Fast roofing	X
Lightning Fast Roofing and Solar	X
Scrub Pros Cleaning LLC dba Clearsite Construction Services	X
Southeastern surfaces and Equipment	X
Cherry Woodworking Inc	X
Roman Roofing Inc	X
Southeast Speciality Products, Inc.	X
Manasota Flooring	X

Bolcor Commercial Flooring	X
Lee Drywall	X
Overhead Door	X
HRI AC and Gas Services	X
Associated Companies Inc dba Associated Electric	O
Florida Engineering & Surveying	X
South Coast Concrete	X
Advanced Masonry Associates	X
Tampa Amalagated Steel	X
TAW Power Systems dba Integrated Power Services	X
Dolphin Innovations, LLC	X
Fabricated Products of Tampa	X
ADG Power & Automation	X
Key Glass, Inc.	X
Parsons & Associates dba Overhead Door Company of Tampa Bay	X
Mahoney Concrete Systems	X
Inteligent Infrastructure Systems	X
Tri-Tech Mechanical	X
Builder Services Group dba West Coast Insulation	X
Eagle Roofing and Restoration	X
Souther Plains Roofing	X
Bonitz	O
T&T Construction Management	X
Stryker Electrical	X
Bluefin Mechanical	X
Johnson Controls	X
Above All Cauling and Waterproofing	X
Ackerman Plumbing Inc.	X
Tailored Foam of Florida	X
Steward Mellon Company	X
Pipe Rite Fire Sprinklers	X
Viking Construction Corp od SW Florida	X
Tiger Builders	X
ADT Commercial	X
Browning Chapman	X
French's Air Conditioning	X
Acousti Engineering Company	X
Ring Power Corporation	X
Landmark Services of Southwest FL	X
Cook & Board dba Specialized Architectural	X
Bell Architectural Specialites	X
Datatek	X
Spray Foam Genie	X
ProMedia	X
Crime Sheild	X
D L Porter Constructors	X
C4 Contractors Corp	X

Midwest Alarm Company dba BCI Integrated Solutions	X
Coast to Coast Fire Protection	X
Wallpaper World of SW FL	X
Suncoast Commercial Glass	X
Genset Services	X
United Mechanical	X
Floricrete LLC	X
24-7 Floors, LLC	X
Backbay Construction	X
AMS Floors	X
Tamiami Painting Inc	X
Spectra Contract Flooring	X
Steve Ward & Associates	X
Architectural Coatings Inc of Florida	X
Orb Roofing Solutions	X
EMI Construction	X
Fields Door & Hardware	X
Bay to Bay Stone Restorations	X
Ohana Et Al Corp dba AL Brothers	X
Stancel Concrete Inc.	X
Fire Safety	X
Assa Abloy Entrance Systems	O
Horizons Blinds and More	X
Acolite & Claude United Sign	X
Sunshine Project Management	X
Gulf Coast Signs of Sarasota	X
Paving a Creation dba Intrastate Terrazzo	O
Wade's Carpet & Interiors	O
Seco Holdings	X
Gulfshore Drywall	X
Hoff Enterprises, Inc	X
Leggett Roofing LLC	X
ATS Waypoint	O
Universal Window Solutions	X
Distinct Designs Custums	X
Bay to Bay Balancing, Inc	X
Breesee Woodwork Inc dba Elite Woodwork	O
Mullet's Aluminum Products, Inc.	X
Aristocrat Plumbing, Inc	O

SENT IN BUT NEEDED EDRA FORMS FIXED EMAILED

On The Mark Spray Foam Insulation	No bid
Naaman & Davidson Surveying	3/20/2024
R. Simpson Plastering and Stucco	No Bid
Pristine Post Construction Cleaning	3/20/2024
Franklins Plumbing LLC	No Bid

Date reached out to be fixed

Deme Construction	3/19/2024	Just wanted Civil
Jansen Shutters & Specialities	3/15/2024	no response
Quality Cleaning Service	3/15/2024	emailed twice
SGA Management	3/15/2024	emailed twice
Breezee Door Installations	3/27/2024	4/4/2024
Center State	3/27/2024	4/4/2024
Specified Architectural Systems	3/27/2024	4/4/2024 No bid
Rams Roofing	3/27/2024	4/4/2024
Door and Hardware Openings	3/22/2024	4/4/2024
USF West Coast Insulation	3/26/2024	
Advanced Control Corporation	3/27/2024	4/4/2024
Impact Fire Service	3/28/2024	4/4/2024 no bid
AP Contracting LCC	3/28/2024	4/4/2024
Identiy Group	3/28/2024	4/4/2024
Schiller	3/28/2024	4/4/2024
Kingspan Insulated panels	3/29/2024	4/4/2024 No bid

	Email Address	Exempt Plans originally received
ed	mprice@seagatedevelopmentgroup.com	All
ave not	maurice@stellargc.com	All
	erika@decontracting.com	All
	jsilling@whartonsmith.com	All
	tom@aoc3.com	C,D,E
	mmastro@ryconinc.com	All
	ctitus@accicable.com	D
	tony.liga@apg.company.com	C,D,E
	matt@agtbuilders.com	C
	jmaxey@hbsdrywall.com	C & I
	bcb@wiginton.net	E,C,D,I
	jherrara@ctilabs.net	F & I
	anthonyQCC@gmail.com	C
	fl@ctg-inc.com	All
	accounting@ofdc-inc.com	All
	mat.wright@hanlonceilings.com	All
	sales@psicrew.com	C
	jeffs@servicecontracting.com	All
	debbybrunath@yahoo.com	All
	southwestconcreteandmasonry@gmail.com	All
	bobc@powerairconditioning.com	All
	jess.senn@duraservcorp.com	All
	dan@suncoastdoor.com	All
	adonato@craluminum.com	All
	tkrawiec@starexterminators.com	All
	whitney@eastcoastmetals.net	All
	ctsoutsouris@sfab.com	All
	jasonb@bates-electric.com	C,D,E,F,G
	evpinc@aol.com	All
	Isaac@nusonelectric.com	All
	parketucker@5tco.com	All
	brad@suncoastindustries.net	All
	eric@bigriverroofing.com	All
	prm@montgomerycabinetry.com	C
	james@charlotte.plumbing	All
	tyler.corbett@cfcsystems.com	All
	ted.garry@truteam.com	All
	carlos_hiller8@hotmail.com	All
	andrew.miller@clearsiteconstruction.com	All
	mblanchard@sseteam.com	All
	tony.cherrywoodworking@gmail.com	All
	eddie@romanroofinginc.com	All
	sespecproducts@earthlink.net	C,G,I
	skleine@manasotaonline.com	All

mathewp@bolcor.com	All	
pe@leedrywall.com	All	
tracy@ohsarasota.com	All	
mike@hrinaples.com	H,I	
jason.varner@associatedelectric.com	All	
boots@florida-eas.com	All	
rmccone@southcoastconc.com	All	
ron@advmasonry.com	All	
john@tascoonline.com	All	
john.stlouis@ips.us	All	
john@dolphininnovations.com	All	
jeff@fabricatedprod.com	All	
amier.habayeb@adgpwr.com	C,D	
derekwhetsel@keyglass.com	All	
josh@overheadtampa.com	C	
jeremy@mahoneyconcrete.net	All	
stherrien@i2solutionsllc.com	C,D,E,G	
jason@tri-techmechanical.com	All	
shoehn@usiinc.com	All	
gregg@eaglerr.net	C,D,E,F,G,I	
bobtspp@outlook.com	All	
peteflores@bonitz.com	All	
shiv.chudasama@ttcon.com	All	
m.meyer@stryker-electric.com	All	
kdeshields@bluefinmech.com	C,D,G,H,I	
stephen.harbuck@jci.com	D,E,G	
jimk@aboveallcaulk.com	All	
eric@ackermanplumbinginc.com	All	
estimates@tailoredfoaminc.com	C,I	
catalinan@stewardmellon.com	C,I	No Bid
jwlucas@verizon.net	E	
jason@vikingfl.com	C	
mminotti@tigerbuildersinc.com	C	
sullivandaniel@adt.com	C,D,E,F,G	
bfields@browningchapman.com	C	
asheely@frenchac.com	All	
shawnkammerer@acousti.com	All	
allyson.keeny@ringpower.com	All	
M.Bowman@landmarksvcs.com	C,I	
mwinborn@specilizedap.com	C	
dabell2355@gmail.com	All	
chip@datatekav.com	C,D,G	
timothy.fuller@sprayfoamgenie.com	C,D,F,G,I	
tony.tregillus@thepromediagroup.com	D	
crimeshieldsfs@gmail.com	All	
kim@dlporter.com	All	
elvys@c4con.net	All	

ithompson@bcifl.net	All
kaitlyn@ccfpfl.com	All
scott.wallpaperworld@gmail.com	All
jrichards@suncoastgw.com	All
storstade@gensetservices.com	1D
dpine@umihvac.com	All
wallyB@Floricrete.com	1C,1G, 1I
Scott@floors4pros.com	All
mike@backbayconstruction.com	All
peter@amsfloors.com	1C
tamiami.painting@icloud.com	All
jj.gruden@spectracf.com	All
jennifer@swainc.com	1C
joe@archcoatings.com	All
christina@orb.solutions	All
magdiel@emiconstructioninc.com	1C, 1I
dfields@fdhinc.net	1C
jr@btbsr.com	1C
tdexter@albrothers.com	1C
chad@stancelconcrete.com	1C 1I
estimating@firesafety-inc.com	1C & 1I
ted.blake@assaabloy.com	1C & 1I
horizonms.planner@gmail.com	1C &1I
andrew@acusigns.com	1C
samf@seu-usa.com	1c&1I
h.kutat@gulfcoastsigns.com	1C-1I
kip@iterrazzo.com	All
tim@wadesinteriors.com	All
Steve@secosouth.com	All
Caleb@gulfshoredrywall.com	All
ken@heiflorida.com	All
tony@leggettroofing.com	All
jansenf@atswaypoint.com	All
george@uws.solutions	All
billk@distinctdesignsfl.com	All
bids@bay2bay.net	G
marcbresee@gmail.com	All
Brent@mulletsaluminum.com	All
Harry@aristocratplumbing.com	1C, !G, !I

Exempt Plans received via addendum

Aztek

PAN AMERICAN BLVD. CONDUIT AND FIBER-OPTIC CABLE BETWEEN PARKS MAINTENANCE BLDG. AND FAMILY SERVICE CENTER



Site Location: Pan American Blvd. from Parks Maintenance Bldg. to Family Services Center

GPS Coordinates: 26°6'9.89"N 81°44'38.05"W

City: North Port, FL Sarasota County

Provided by Aztek Communication Technologies

<http://www.azteknapples.com>

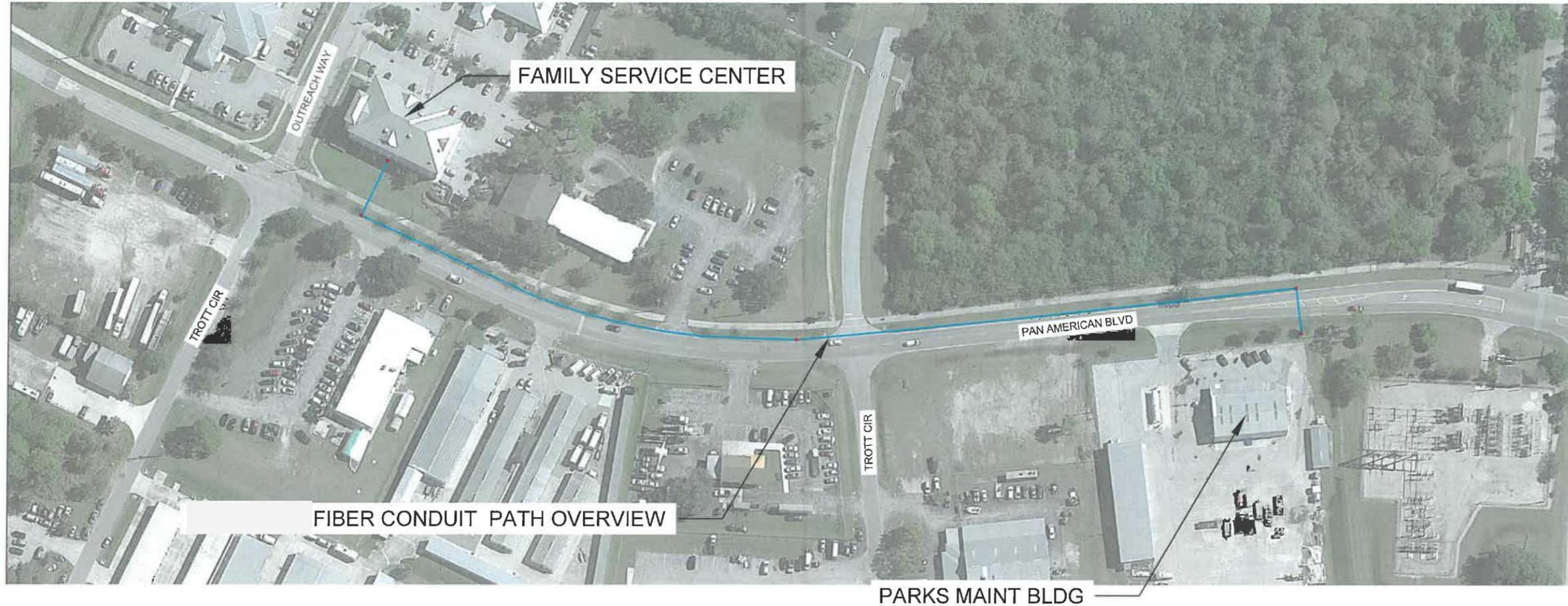
Phone: (239)659-0017

Fax: (239)659-0018



5701 Country Lakes Dr. STE 10
Fort Myers, FL 33905

OVERVIEW



NOTE: EXISTING SIDEWALKS AND DRIVEWAYS REMOVED, DISTURBED OR DESTROYED SHALL BE REPLACED OR REPAIRED IN KIND. THE FINISHED WORK SHALL BE EQUAL OR BETTER IN ALL RESPECTS TO THE ORIGINAL. THE PERMITTEE, AT HIS EXPENSE, SHALL REPLACE ALL TREES AND SHRUBBERY DAMAGED OR DISTURBED DURING CONSTRUCTION. IF THE EXISTING VEGETATION IS IMPROVED LANDSCAPING, PLANS ARE TO BE PREPARED BY A FLORIDA REGISTERED LANDSCAPE ARCHITECT TO ADDRESS THE REMOVAL, RELOCATION AND RESTORATION AS PART OF THE PERMITTING APPROVAL PROCESS. THE PERMITTEE IS RESPONSIBLE FOR THE RESTORATION OF THE LANDSCAPE IMPROVEMENTS AND REIMBURSEMENTS TO CITY OF VENICE. ANY PRIVATE PLANTINGS REMOVED DURING CONSTRUCTION SHALL BE REPLACED. THE PERMITTEE, AT HIS OWN EXPENSE, SHALL REMOVE ALL DEBRIS. ANY YARD OR PORTION OF THE RIGHT-OF-WAY FRONTING PRIVATE PROPERTY WITH GRASS WILL BE RESTORED WITH LIKE SOD. SEEDING AND MULCHING OPERATIONS ARE TO BEGIN WITHIN THREE WEEKS AFTER THE UTILITY IS INSTALLED, EXCEPT IN CASES OF FRONT AND BACK SLOPES, WHICH SHOULD BE DONE AS SOON AFTER SHAPING AS POSSIBLE. THE PERMITTEE SHALL MAINTAIN THE PORTION OF THE RIGHT-OF-WAY AFFECTED BY THE INSTALLATION UNTIL ACCEPTABLE VEGETATION IS ESTABLISHED PER THE CITY OF VENICE LANDSCAPE AND IRRIGATION SPECIFICATIONS FOR BEAUTIFICATION IMPROVEMENTS WITHIN THE PUBLIC RIGHT-OF-WAY.



DATE: 8/31/20
 DESIGNED: AZTEK COMMUNICATIONS
 DRAWN: SPENCER RENOSIS
 CHECKED: SCOTT COYNE
 APPROVED: 8/31/20

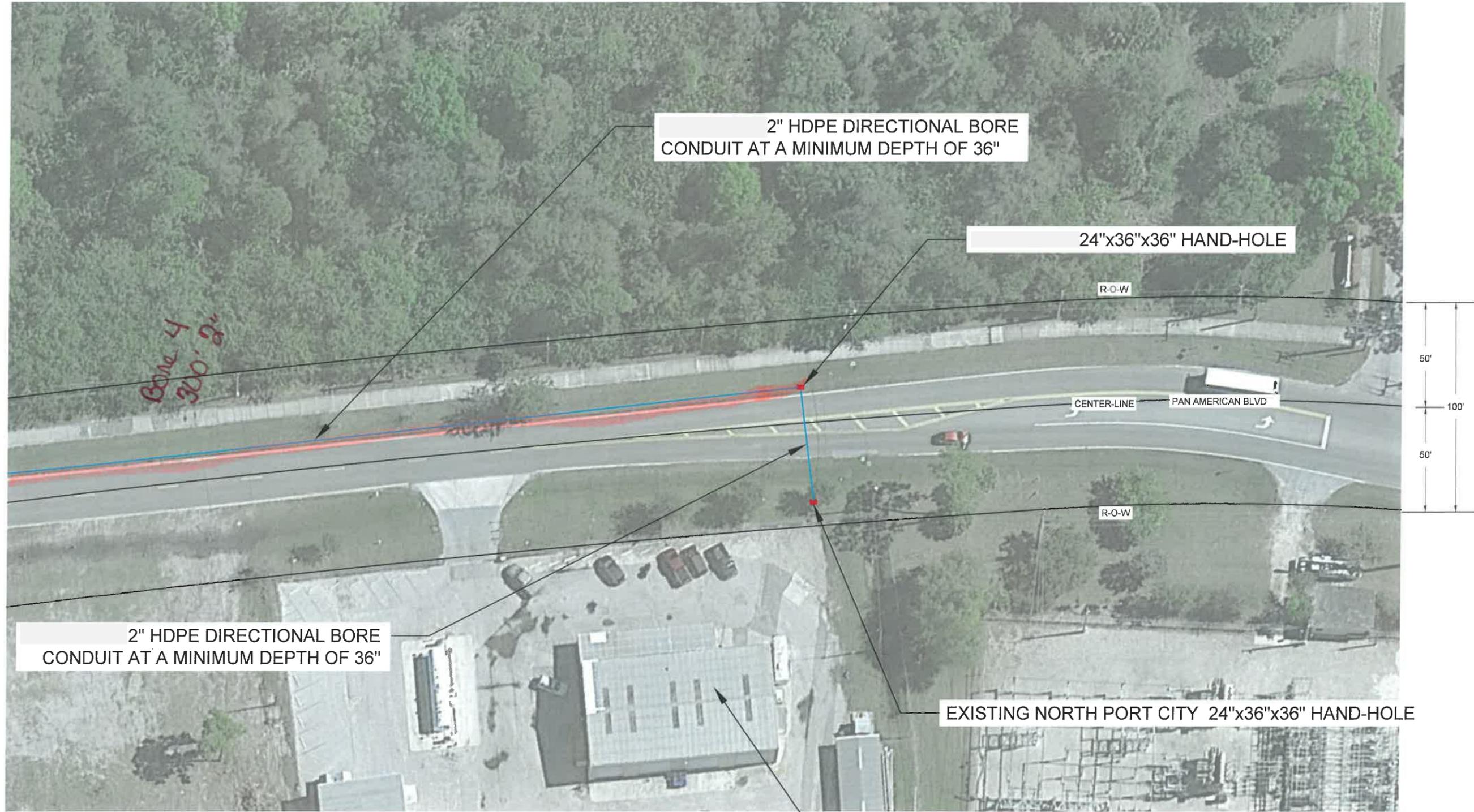
PAN AMERICAN BLVD.
 FIBER-OPTIC CONDUIT

CITY OF NORTH PORT IT DEPT.
 NORTH PORT, FL



SCALE: 1" = 150'
 PLOT DATE: 8/31/2020 12:36 PM
 SHEET: 1 of 6

NOTE: Potable water, non-potable irrigation water, and wastewater pipelines shall be separated from telephone, power, cable, and gas sleeves/lines and any other underground utilities by a minimum clear vertical distance of eighteen inches (18") and horizontal distance of five feet (5').



Bore 4
300' @

2" HDPE DIRECTIONAL BORE
CONDUIT AT A MINIMUM DEPTH OF 36"

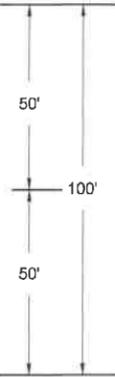
24"x36"x36" HAND-HOLE

R-O-W

CENTER-LINE

PAN AMERICAN BLVD

R-O-W



2" HDPE DIRECTIONAL BORE
CONDUIT AT A MINIMUM DEPTH OF 36"

EXISTING NORTH PORT CITY 24"x36"x36" HAND-HOLE

PARKS MAINTENANCE BLDG



DATE: 9/31/20
 DESIGNED: AZTEK COMMUNICATIONS
 DRAWN: SPENCER RENOSIS
 CHECKED: SCOTT COME
 APPROVED: 9/31/20

PAN AMERICAN BLVD.
 FIBER-OPTIC CONDUIT

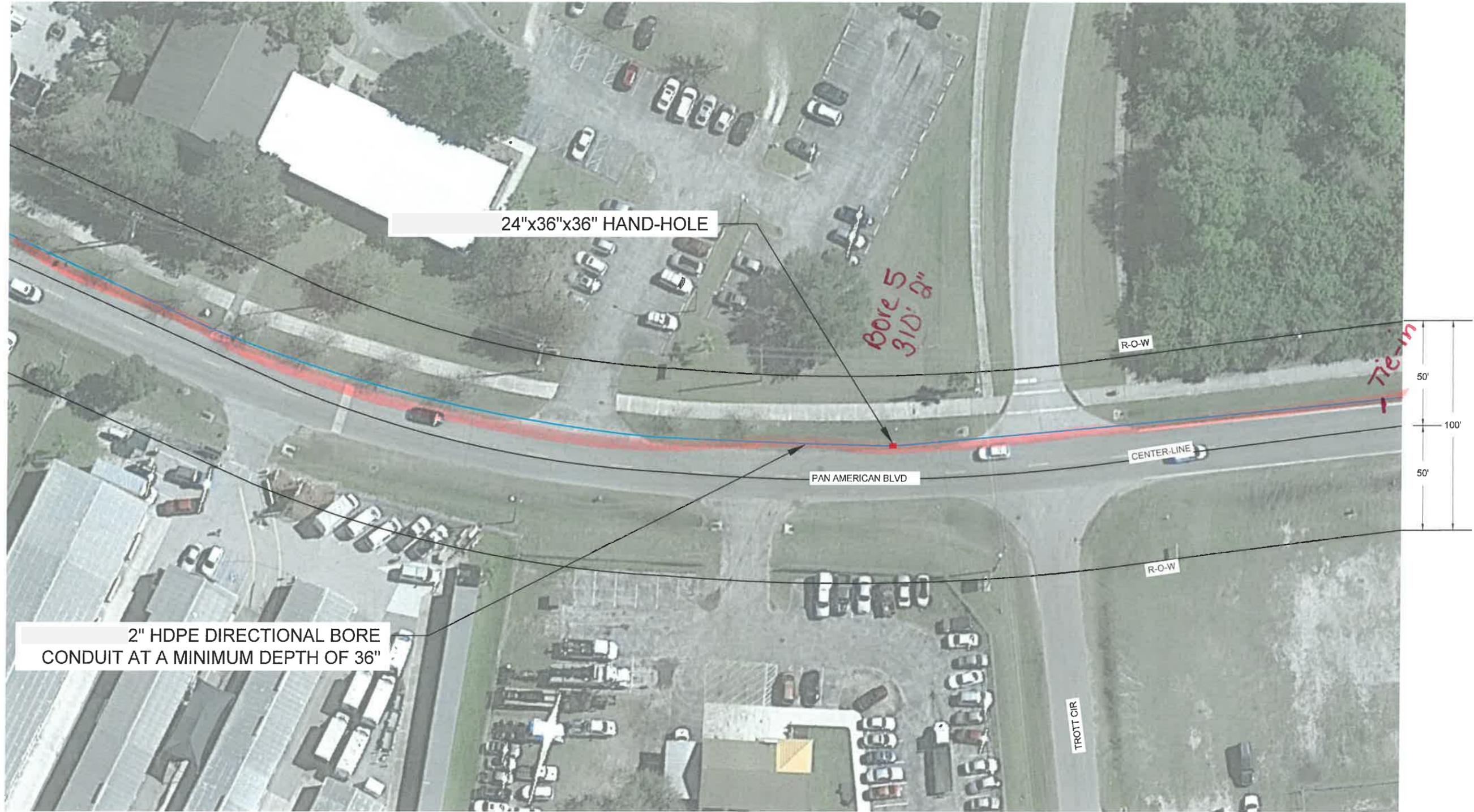
CITY OF NORTH PORT IT DEPT.

NORTH PORT, FL



SCALE: 1" = 50'
 PLOT DATE: 8/31/2020 12:36 PM
 SHEET: 2 of 6

NOTE: Potable water, non-potable irrigation water, and wastewater pipelines shall be separated from telephone, power, cable, and gas sleeves/lines and any other underground utilities by a minimum clear vertical distance of eighteen inches (18") and horizontal distance of five feet (5').



DATE: 8/31/20
 DESIGNED: AZTEK COMMUNICATIONS
 DRAWN: SPENCER RENOSIS
 CHECKED: SCOTT COYNE
 APPROVED: 8/31/20

PAN AMERICAN BLVD.
 FIBER-OPTIC CONDUIT

CITY OF NORTH PORT IT. DEPT.

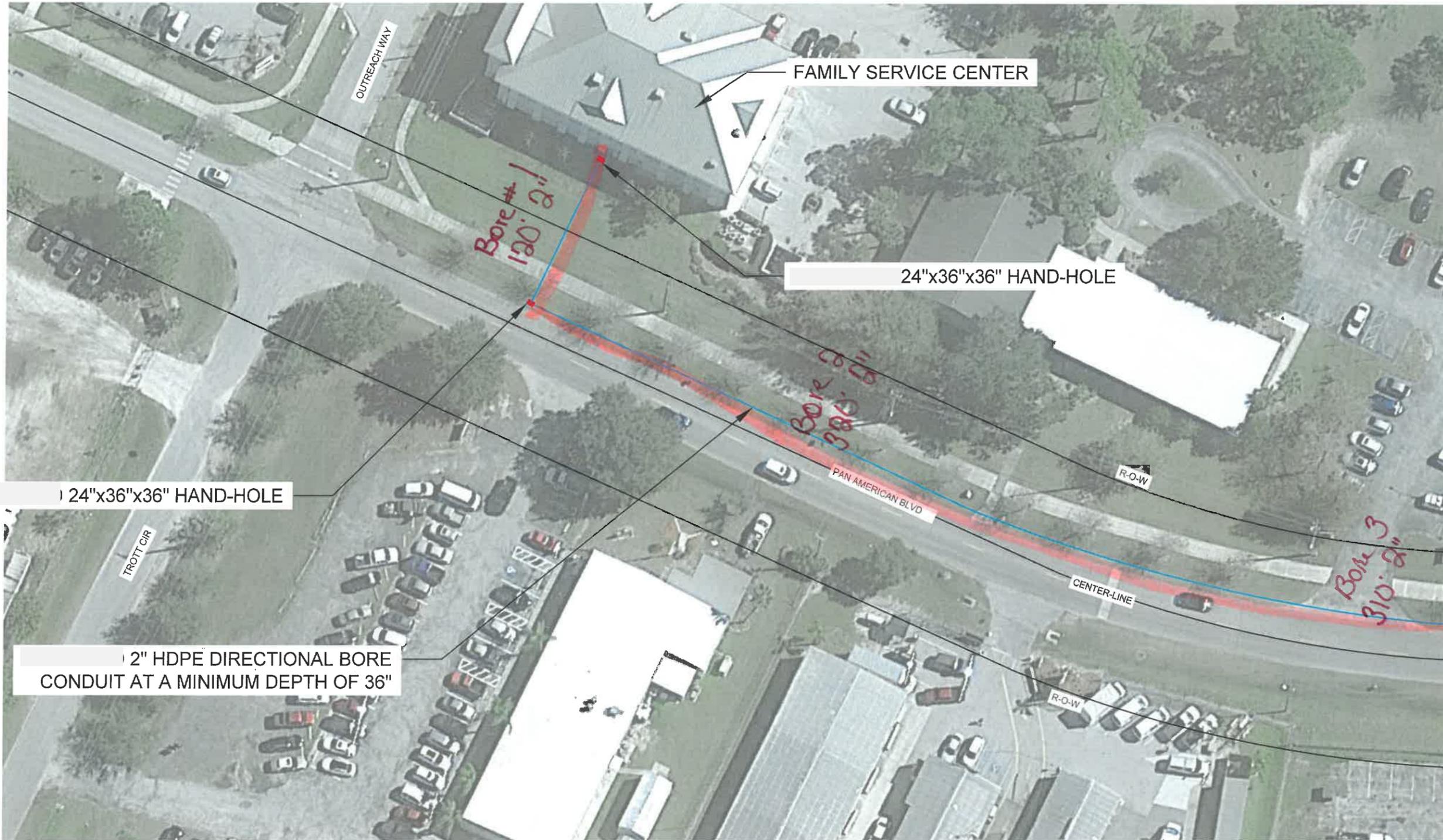
NORTH PORT, FL



SCALE: 1" = 50'
 PLOT DATE: 8/31/2020 12:37 PM
 SHEET: 3 of 6



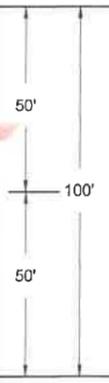
NOTE: Potable water, non-potable irrigation water, and wastewater pipelines shall be separated from telephone, power, cable, and gas sleeves/lines and any other underground utilities by a minimum clear vertical distance of eighteen inches (18") and horizontal distance of five feet (5').



24"x36"x36" HAND-HOLE

2" HDPE DIRECTIONAL BORE CONDUIT AT A MINIMUM DEPTH OF 36"

24"x36"x36" HAND-HOLE



DATE: 8/31/20
 DESIGNED: AZTEK COMMUNICATIONS
 DRAWN: SPENCER RENOSIS
 CHECKED: SCOTT COYNE
 APPROVED: 8/31/20

PAN AMERICAN BLVD.
 FIBER-OPTIC CONDUIT

CITY OF NORTH PORT, FL
 NORTH PORT, FL



SCALE: 1" = 50'
 PLOT DATE: 8/31/2020 12:37 PM
 SHEET: 4 of 6

MATERIAL DATA SHEET:

24"x36"x24" HANDHOLES:

MANUFACTURER: HUBBEL Power Systems, Inc.
BOX PART#: PG2436BA24
BOX DESCRIPTION: Standard Open Bottom
BOX DEPTH: 24"
BOX TIER: 22
BOX DESIGN/TEST LOAD#: 22,500 / 33,750
BOX WEIGHT#: 180

COVER PART#: PG2436HH00**
COVER DESCRIPTION: UL W / 2 BOLTS
COVER TIER: 22
COVER DESIGN/TEST LOAD#: 22,500 / 33,750
COVER WEIGHT#: 122

FIBER-OPTIC CABLE:

MANUFACTURER: Optical Cable Corporation
FIBER TYPE: Single-Mode OSP
BUFFER TYPE: Loose Tube
BUFFER COUNT: 4
STRAND COUNT: 48

2" HDPE CONDUIT:

MANUFACTURER: DURALINE
MATERIAL: HIGH DENSITY POLY-ETHELYNE
INTERNAL DIAMETER: 2"
SDR: 13.5
COLOR: ORANGE

DATE: 8/31/20
DESIGNED: AZTEK COMMUNICATIONS
DRAWN: SPENCER REMOSIS
CHECKED: SCOTT COYNE
APPROVED: 8/31/20

PAN AMERICAN BLVD.
FIBER—OPTIC CONDUIT

CITY OF NORTH PORT, FL

NORTH PORT, FL

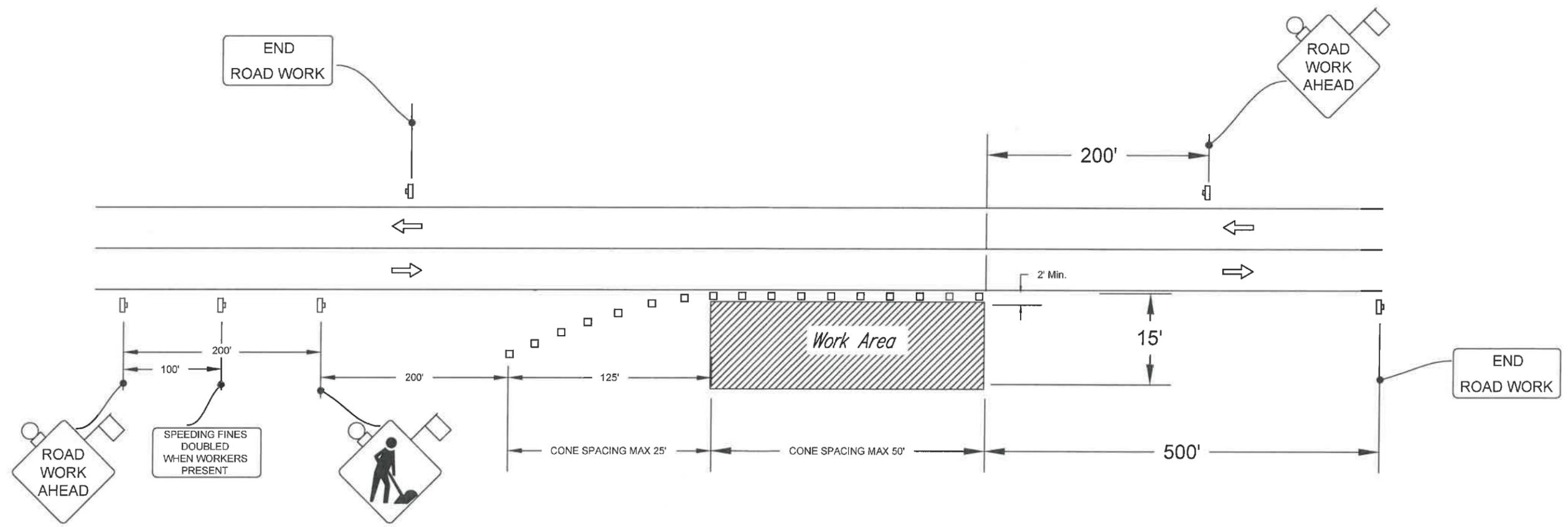


SCALE: #####
PLOT DATE: 8/31/2020 12:37 PM
SHEET: 5 of 6

MANAGEMENT OF TRAFFIC FOR ROAD WORK

BASED ON INDEX 612 OF FDOT DESIGN STANDARDS

DATE: 8/31/20
 DESIGNED: AZTEK COMMUNICATIONS
 DRAWN: SPENCER RENOSIS
 CHECKED: SCOTT COYNE
 APPROVED: 8/31/20



SYMBOLS

- Work Area
- Sign with 18" x 18" (Min.) Orange Flag and Type B Light
- Channelizing Device (CONE)
- Work Zone Sign
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. When four or more work vehicles enter the through traffic lanes in a one hour period or less (excluding establishing and terminating the work area), the advanced FLAGGER sign shall be substituted for the WORKERS sign.
2. WORKERS sign to be removed or fully covered when no work is being performed.
3. SHOULDER WORK sign may be used as an alternate to the WORKER symbol sign only on the side where the shoulder work is being performed.
4. When a side road intersects the highway with the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ indexes.
5. For general TCZ requirements and additional information refer to Index No. 600. in FDOT Design Standards.

DURATION NOTES

1. Signs and channelizing devices may be omitted if all of the following conditions are met:
 - a) Work operations are 60 minutes or less.
 - b) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCRROACH ON THE AREA CLOSER THAN 15' BUT NOT CLOSER THAN 2' TO THE EDGE OF TRAVEL WAY.

PAN AMERICAN BLVD.
 FIBER-OPTIC CONDUIT

CITY OF NORTH PORT, FL



SCALE: 1" = 25'
 PLOT DATE: 8/31/2020 12:37 PM
 SHEET: 6 of 6

CABCO CORP. DIRECTIONAL BORE SHOT REPORT

DATE: 8-21-20

JOB# Bore 6

VENDOR NAME: Power Design

SCOPE OF WORK: 7-2" 1-1" 80'

LOCATION: 1221 GulfShore Blvd N

GROUND CONDITION: _____

PRE-REAM: YES NO

FOREMAN: Sylvester

CREW #: 12

PITCH	DEPTH	CORR.	PITCH	DEPTH	CORR.	PITCH	DEPTH	CORR.
-40	10'		120'			230'		
	15'		125'			235'		
-30	20'		130'			240'		
	25'		135'			245'		
-20	30'		140'			250'		
	35'		145'			255'		
-10	40'		150'			260'		
	45'		155'			265'		
+0	50'		160'			270'		
	55'		165'			275'		
+0	60'		170'			280'		
	65'		175'			285'		
+0	70'		180'			290'		
	75'		185'			295'		
+20	80'		190'			300'		
	85'		195'			305'		
+30	90'		200'			310'		
	95'		205'			315'		
	100'		210'			320'		
	105'		215'			325'		
	110'		220'			330'		
	115'		225'			335'		

CABCO CORP. DIRECTIONAL BORE SHOT REPORT

DATE: 8-18-20
 VENDOR NAME: Power Design
 LOCATION: 1221 GulfShore Blvd
 PRE-REAM: YES NO

JOB# Bore 3
 SCOPE OF WORK: 180' ~~7~~-2" 1-1"
 GROUND CONDITION: _____
 FOREMAN: Sylvester
 CREW #: 12

PITCH	DEPTH	CORR.	PITCH	DEPTH	CORR.	PITCH	DEPTH	CORR.
-32	10'		-1	120'			230'	
	15'			125'			235'	
-33	20'		+11	130'			240'	
	25'			135'			245'	
-32	30'		+20	140'			250'	
	35'			145'			255'	
-21	40'		+12	150'			260'	
	45'			155'			265'	
-17	50'		+25	160'			270'	
	55'			165'			275'	
-4	60'		+40	170'			280'	
	65'			175'			285'	
+1	70'		OUT	180'			290'	
	75'			185'			295'	
+1	80'			190'			300'	
	85'			195'			305'	
+0	90'			200'			310'	
	95'			205'			315'	
-2	100'			210'			320'	
	105'			215'			325'	
-0	110'			220'			330'	
	115'			225'			335'	

CABCO CORP. DIRECTIONAL BORE SHOT REPORT

DATE: 8-17-20

JOB# _____

VENDOR NAME: Power Design

SCOPE OF WORK: Bore 1 180' 3-4"

LOCATION: 1221 Gulf Shore Blvd N

GROUND CONDITION: _____

PRE-REAM: YES NO

FOREMAN: Sylvester

CREW #: 12

PITCH	DEPTH	CORR.	PITCH	DEPTH	CORR.	PITCH	DEPTH	CORR.
-24	10'		+10	120'			230'	
	15'			125'			235'	
-28	20'		+10	130'			240'	
	25'			135'			245'	
-21	30'		+14	140'			250'	
	35'			145'			255'	
-10	40'		+23	150'			260'	
	45'			155'			265'	
-9	50'		+25	160'			270'	
	55'			165'			275'	
-9	60'		+23	170'			280'	
	65'			175'			285'	
-10	70'			180'			290'	
	75'			185'			295'	
-10	80'			190'			300'	
	85'			195'			305'	
-0	90'			200'			310'	
	95'			205'			315'	
+0	100'			210'			320'	
	105'			215'			325'	
T6	110'			220'			330'	
	115'			225'			335'	

CABCO CORP. DIRECTIONAL BORE SHOT REPORT

DATE: 8-18-20

JOB# Bore 2

VENDOR NAME: Power Design

SCOPE OF WORK: 180' 4-4"

LOCATION: 1221 Gulf Shore Blvd N

GROUND CONDITION: _____

PRE-REAM: YES NO

FOREMAN: Sylvester

CREW #: 12

PITCH	DEPTH	CORR.	PITCH	DEPTH	CORR.	PITCH	DEPTH	CORR.
-30	10'		+8	120'			230'	
	15'			125'			235'	
-35	20'		+14	130'			240'	
	25'			135'			245'	
-34	30'		+23	140'			250'	
	35'			145'			255'	
-22	40'		+6	150'			260'	
	45'			155'			265'	
-14	50'		+13	160'			270'	
	55'			165'			275'	
-7	60'		+31	170'			280'	
	65'			175'			285'	
+0	70'		OUT	180'			290'	
	75'			185'			295'	
+0	80'			190'			300'	
	85'			195'			305'	
-0	90'			200'			310'	
	95'			205'			315'	
-1	100'			210'			320'	
	105'			215'			325'	
+7	110'			220'			330'	
	115'			225'			335'	

CABCO CORP. DIRECTIONAL BORE SHOT REPORT

DATE: 8-20-20
 VENDOR NAME: Power Design
 LOCATION: 1221 GulfShore Blvd N
 PRE-REAM: YES NO

JOB# Bore 4
 SCOPE OF WORK: 80' 3-4"
 GROUND CONDITION: _____
 FOREMAN: Sylvester
 CREW #: 12

PITCH	DEPTH	CORR.	PITCH	DEPTH	CORR.	PITCH	DEPTH	CORR.
-37	10'		120'			230'		
	15'		125'			235'		
-24	20'		130'			240'		
	25'		135'			245'		
4-20	30'		140'			250'		
	35'		145'			255'		
	40'		150'			260'		
	45'		155'			265'		
	50'		160'			270'		
	55'		165'			275'		
	60'		170'			280'		
	65'		175'			285'		
	70'		180'			290'		
	75'		185'			295'		
	80'		190'			300'		
	85'		195'			305'		
	90'		200'			310'		
	95'		205'			315'		
	100'		210'			320'		
	105'		215'			325'		
	110'		220'			330'		
	115'		225'			335'		

CABCO CORP. DIRECTIONAL BORE SHOT REPORT

DATE: 8-20-20

JOB# Bore 5

VENDOR NAME: Power Design

SCOPE OF WORK 80' 4" 11"

LOCATION: 1221 GulfShore Blvd N

GROUND CONDITION: _____

PRE-REAM: YES NO

FOREMAN: Sylvester

CREW #: 12

PITCH	DEPTH	CORR.	PITCH	DEPTH	CORR.	PITCH	DEPTH	CORR.
-32	10'		120'			230'		
	15'		125'			235'		
-28	20'		130'			240'		
	25'		135'			245'		
-15	30'		140'			250'		
	35'		145'			255'		
+0	40'		150'			260'		
	45'		155'			265'		
+10	50'		160'			270'		
	55'		165'			275'		
+20	60'		170'			280'		
	65'		175'			285'		
+20	70'		180'			290'		
	75'		185'			295'		
+30	80'		190'			300'		
	85'		195'			305'		
	90'		200'			310'		
	95'		205'			315'		
	100'		210'			320'		
	105'		215'			325'		
	110'		220'			330'		
	115'		225'			335'		



City of North Port
FINANCE DEPARTMENT/PURCHASING DIVISION
4970 CITY HALL BLVD, STE 337
NORTH PORT, FLORIDA 34287
Office: 941.429.7170
Fax: 941.429.7173
Email: purchasing@cityofnorthport.com



April 12, 2024
ADDENDUM 14

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE APRIL 23, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

1Q: Will the City provide diesel fuel for both 500kw generators or should the cost be included in the bid price?

1A: Provide cost for fuel in the bid price.

2Q: Confirm the bid price is to include the following for both 500kw generators.

- a. 12-months full maintenance service
- b. Independent testing agency to perform tests and inspections and to prepare reports. Note: The specifications also require the manufacturers service rep to perform tests, inspections and reports similar to the independent testing agency.
- c. Seismic design and restraints including delegated engineering.

2A:

- a. Yes, include in price.**
- b. Yes, include in price.**
- c. Yes, include in price.**

3Q: Confirm this project does not require compliance with the "Buy American Act" as referenced in Section 27 00 00, 28 00 00 and sporadically mentioned throughout other specification sections. Alternatively, provide a specific list of all material, equipment, and components that must comply with Buy American.

3A: Confirmed. "Buy American Act" not required. Spec section to be revised in future addendum.

4Q: Confirm t this project does not require compliance with seismic-restraint design although it is referred throughout specification divisions 21, 22, 23, 26, 27 and 28. Note: Most of these Sections refer to the structural specifications for seismic criteria which is not shown on the structural drawings.

4A: confirmed no seismic requirements , spec sections to be revised in future addendum .

5Q: Confirm that cement and grout cement per Section 04 22 00 Paragraphs 2.2 and 2.4 do not need to comply with "manufactured within 500 miles of the project site" since this is unusual and not locally available.

5A: This is not required and will be removed from the project specifications

6Q: Confirm that Section 05 52 13 is not applicable since there is not a balcony per Paragraph 1.1 fabricated with 1 ½" round pipe per Paragraph 2.1. Note: The mezzanine shown on Sheet A412 shows 2" x 2" tube steel posts, top and intermediate rails with a 4" continuous kick plate.

6A: Specification to be update to note "equipment platform" not "balcony". Architectural details on A412 to be updated to show 1.5" round pipe throughout. 4" continuous kick plate required

7Q: Confirm that the steel pipe bollard fabricator (supplier) is not required to be IAS accredited per Section 05 50 00 Paragraph 1.4(E) and 1.5(B) since this is the only fabricated item applicable to this project per Paragraph 2.3(C). Note: Paragraph 2.3(A), (B), (D), (E), and (F) are not shown on the drawings.

7A: Confirmed not required. Sections 1.4E and 1.5B will be removed. As will 2.3 A, B, D, and E. (F is required. This is for Uni-Strut applications.)

8Q: Although Section 06 10 00 Paragraph 2.3(B) includes a specification for 3/4" A-D plywood for the communications and electric room, none is shown on the drawings. If required, provide the room number(s), identify the walls and the height to receive plywood.

8A: Electrical drawings update in future addendum

9Q: Provide design drawings for the 2-way communication systems per Section 27 20 00 if applicable to this project since it is not shown on the drawings.

9A: 2-way communication systems are not included in this project. This spec section will be removed from the TOC. Please disregard.

10Q: Provide design drawings for the emergency radio communication enhancement system per Section 28 31 50 if applicable to this project since it is not shown on the drawings.

10A: Emergency radio communication enhancement systems are not included in this project. Please disregard.

11Q: Verify that the Fire Alarm drawings conform with and include all components per Section 28 31 11 since the specification seems to include more than minimum code requirements. Note: Mechanical equipment duct detectors are not shown on the fire alarm drawings or noted on the equipment schedules.

11A: Refer to the systems plans for fire alarm devices required. Mechanical equipment duct detectors are indicated on mechanical power sheets and systems sheets.

12Q: Provide complete design drawings for the audio-visual systems per Section 27 41 00 since Sheets E401A and E401B show only a few TV coax outlets. The design drawings should include riser diagram(s), equipment schedule(s) and enlarged rooms showing all equipment, racks, devices, cable trays, etc. so a complete and accurate price can be developed. Note: Section 27 41 00 Paragraphs 2.4 through 2.8 refer to room numbers and equipment not shown on the drawings.

12A: Please disregard RFI response 9.3. AV speakers will be provided in conference room. Upcoming drawing addendum will provide the requested details

13Q: Provide complete design drawings for the access control system per Section 28 13 00 since Sheets E401A, E401B and E401C show only card readers at certain doors. The design drawings

should include riser diagram(s), equipment schedule(s) and enlarged rooms showing all equipment, racks, devices, cable trays, etc. so a complete and accurate price can be developed.

13A: Drawing shows location for equipment . Equipment Schedule will be provided. E series drawings to be updated to provide additional information.

14Q: Provide complete design drawings for the video surveillance per Section 28 23 00 since Sheets E401A, E401B, E401C and E201 show only CCTV cameras. The design drawings should include riser diagram(s), equipment schedule(s) and enlarged rooms showing all equipment, racks, devices, cable trays, etc. so a complete and accurate price can be developed. Note: Section 28 23 00 Paragraph 2.1(B) includes 14 different camera types that are not identified or correspond with the drawings.

14A: Drawing shows location for equipment . Equipment Schedule will be provided. E series drawings to be updated to provide additional information.

15Q: Provide complete design drawings for the telecommunication systems per Division 27 since Sheets E401A, E401B and E401C show only outlets and ceiling mounted wireless access points (WAP). The design drawings should include riser diagram(s), equipment schedule(s) and enlarged rooms showing all equipment, racks, devices, cable trays, etc. so a complete and accurate price can be developed.

15A: Drawing shows location for equipment . Equipment Schedule will be provided. E series drawings to be updated to provide additional information.

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

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Receipt of Addendum No. 14 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.14



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April 12, 2024
ADDENDUM 15

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE APRIL 23, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

1Q: Provide a dimensionally accurate layout and structural details for the 6" concrete pad for the (2) 500kw generators shown on Sheet E201 since the implied size of 40' x 40' and thickness of 6" seems under designed.

- a. The design should show the location of each generator with the required clearance for operations and service/maintenance in relationship to the protective pipe bollards and edge of the concrete pad. Note: Each generators fuel tank with service platform and stair assemblies is approximately 20' 8" long x 15' 7" wide.
- b. Detail 6/S400 shows an 8" reinforced at grade pad with a reinforced thickened edge. Should this design be used for the generator(s) equipment slab instead of the 6" pad noted on E201?
- c. The civil drawings imply that this pad is 40' x 40' and shows the elevation at 13.01' per Sheet C104. Should the elevation for this equipment pad be higher than the surrounding pavement?

1A: Use the 8" "At Grade" housekeeping pad per 6/S-400 for all exterior mechanical pads at grade. The more stringent design shall govern. Size and location are per MEP drawings and shall be coordinated with the actual equipment. The structural engineer does not size mechanical supports. Detail 6/S400 has been clarified in the Addendum.

- a. **Generator fuel tanks do not require service platforms and stair assemblies. Bollards will be shifted out slightly in future addendum to provide appropriate clearances**
- b. **Yes, use the 8" "At Grade" housekeeping pad per 6/S-400 for all exterior mechanical pads at grade. The more stringent design shall govern. Size and location are per MEP drawings and shall be coordinated with the actual equipment. The structural engineer does not size mechanical supports. Detail 6/S400 has been clarified in the Addendum.**
- c. **The overall concrete pad is flush with the adjacent asphalt paving. A raised concrete pad is provided below the generators only. See Electrical drawings - E201 for extents, and structural drawings S400 for details.**

2Q: Provide a dimensionally accurate layout and structural design for the following exterior mechanical equipment shown on Sheets M201A and M201C. Detail 6/S400 shows an 8" reinforced at grade pad with a reinforced thickened edge. Should this design be used for the exterior mechanical equipment slab?

This detail directs us to refer to the MEP drawings for size and location. Note: Section 23 50 00 Paragraph 1.9(B) specifies 4" thick concrete pads.

- CU-1A
- CU-1B
- CU-1C
- CU-1D
- CU-1E
- CU-1F
- CU-2A
- CU-2B
- CU-2C
- CU-4

2A: Yes, use the 8" "At Grade" housekeeping pad per 6/S-400 for all exterior mechanical pads at grade. The more stringent design shall govern. Size and location are per MEP drawings and shall be coordinated with the actual equipment. The structural engineer does not size mechanical supports. Detail 6/S400 has been clarified in the Addendum.

3Q: Provide a dimensionally accurate layout and structural design for the equipment pad at the mezzanine for Unit D0AS-3 as shown on Sheet M202B.

3A: Use the "On Slab" housekeeping pad for interior pads over slab. Slab is intended to be 4" min which will be clarified in future addendum. Exact size and location are per MEP drawings and shall be coordinated with the actual equipment.

4Q: Provide a dimensionally accurate layout and structural design for the interior 6" housekeeping pad per 1/P500 for the hot water heaters and thermal expansion tanks.

4A: Exact size and location are per MEP drawings and shall be coordinated with the actual equipment. The more stringent thickness or requirements shall govern. Detail 6/S400 has been clarified in the Addendum.

5Q: Provide a dimensionally accurate layout and structural design for the equipment pads for the electrical automatic transfer switches, transformers, panels, etc. Note: Section 26 05 29 Paragraph 3.4, Section 26 24 13 Paragraph 3.3, and Section 26 36 00 Paragraph 3.1(B) refers to 4" high reinforced concrete base.

5A: Exact size and location are per MEP drawings and shall be coordinated with the actual equipment. The more stringent thickness or requirements shall govern. Detail 6/S400 has been clarified in the Addendum.

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

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**Receipt of Addendum No. 15 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.15**



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April 12, 2024
ADDENDUM 16

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE APRIL 23, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

1Q: can you please let me know if the city has a preferred HVAC controls vendor or group of approved controls manufacturers?

1A: There is no preferred HVAC controls vendor

2Q: Is there a city-wide Enterprise server that this building should be connected to, or will it act as a standalone facility?

2A: The fiber connection that was requested will provide the path to the city-wide enterprise servers located at City Hall.

3Q: Please advise if there are window shades Div 12 on this project

3A: See response to addendum 2, question 16.

4Q: From a site subcontractor, "Current set of civil plans are in 8-1/2x11 inch format. Please re-issue in 24x36 inch format"

4A: Site plans were delivered full size

5Q: Please advise if Daiken Applied can be considered an approved equal for the VRF and DOAS?

5A: Equal substitutions may be submitted and reviewed during construction administration

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

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Receipt of Addendum No. 16 shall be noted within the Bid Form in the appropriate section.

End of Addendum No.16



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April 19, 2024
ADDENDUM 17

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE EXTENSION: ~~APRIL 23~~, May 14, 2024, AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

DUE DATE EXTENSION: ~~APRIL 23~~, May 14, 2024, AT 2:00 P.M.

TIME FOR QUESTIONS HAS PASSED.

TO ALL PRIME AND SUBCONTRACTORS: THE LAST DAY TO SUBMIT EDRA FORM REQUEST ATTACHMENT 17 IS MAY 3, 2024.

ITEMS ATTACHED:

- Addendum 17 Narrative 18 pages
- Addendum 17 Specification Changes 474 pages
- EDRA FORM for new plan set.

Not Attached

- Addendum 17 Drawings 97 pages. Submit EDRA form for Revised Drawings.

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

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**Receipt of Addendum No. 17 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.17**

**ATTACHMENT 17:
EXEMPT DOCUMENTS REQUEST AND ACKNOWLEDGEMENT (EDRA) FORM**

This Exempt Documents Request and Acknowledgement (“EDRA”) form is sworn to and submitted by the undersigned individual (“Requestor”), personally and on behalf of the below-named entity (“Bidder”), requesting the City of North Port, Florida, a municipal corporation of the State of Florida (“City”), to release to Requestor on behalf of Bidder certain documents exempt from public disclosure as provided by Florida Statutes section 119.071(3), in connection with the following City Solicitation: RFB No. 2024-15 North Port Utilities Administration Building, opening on April 16, 2024. (“Exempt Documents” as further defined in the Bid Documents).

The Requestor must fully complete, sign, and return this form to purchasing@northportfl.gov before the City will consider releasing any Exempt Documents to Requestor. The City will review completed, signed forms on a first-come-first-served basis, subject to staff availability. EDRA forms received less than five business days before Bid Opening will not be reviewed. The Requestor and the Bidder understand and acknowledge that submission of this form in no way guarantees or requires the City to provide the Requestor or the Bidder access to the Exempt Documents.

1. Bidder’s Information:

Entity’s Full Legal Name: _____

Entity’s Business Physical Address: _____

Entity’s Business Mailing Address: _____

Entity’s Federal Identification Number (if applicable): _____

Contact Name: _____

Contact Phone Number: _____

Contact Email: _____

2. Requestor’s Information:

Full Legal Name: _____

Title (in relation to Bidder): _____

Phone: _____

Email: _____

Requestor is a: (Check all that apply and submit a copy of applicable license(s) with this form):

- _____ Florida Licensed Architect
- _____ Florida Licensed Engineer
- _____ Florida Licensed Contractor
- _____ Not Applicable

who is performing work related to a City-owned and/or City-operated building and/or structure.

(Please note that you must hold one of the above Florida licenses to receive documents exempt under Florida Statutes section 119.071(3)(b)).

3. **Exempt Documents Requested:** (Please specify which Exempt Documents are being requested by referencing the titles and labels used in the solicitation):

_____ Addendum 17 Revised Drawings _____

4. **Reason for the Request/Intended Use:** _____

5. **REQUESTOR’S SWORN ACKNOWLEDGEMENT AND CERTIFICATION FOR BIDDER:**

I, the undersigned individual, personally and as an authorized representative of the Bidder, fully understand and acknowledge my and the Bidder’s responsibilities and obligations under Florida’s Public Records Law, including but not limited Florida Statutes section 119.071(3), as amended to maintain the exempt and/or confidential status of all Exempt Document received and that a knowing violation of Florida Public Records Law constitutes a first-degree misdemeanor, punishable by possible criminal penalties of one year in prison, a \$1,000 fine, or both. Further, I the undersigned individual, personally and as an authorized representative of the Bidder, fully understand and acknowledge my and the Bidder’s liabilities, responsibilities, and obligations, generally, and specifically regarding any received Exempt Documents, as detailed in the Bid Documents.

STATE OF _____
COUNTY OF _____

Sworn to (or affirmed) and subscribed before me by means of physical presence or online notarization, this ___ day of _____ 20___, by _____ (name), as _____ (title) for _____ (entity).

Notary Public

___ Personally Known OR ___ Produced Identification
Type of Identification Produced _____

EXHIBIT TO EDRA ATTACHMENT

Florida Statutes Section 119.071(3) (2023) provides in pertinent part:

119.071 General exemptions from inspection or copying of public records.

(3) SECURITY AND FIRESAFETY.—

- (a) 1. As used in this paragraph, the term “security or firesafety system plan” includes all:
- a. Records, information, photographs, audio and visual presentations, schematic diagrams, surveys, recommendations, or consultations or portions thereof relating directly to the physical security or firesafety of the facility or revealing security or firesafety systems;
 - b. Threat assessments conducted by any agency or any private entity;
 - c. Threat response plans;
 - d. Emergency evacuation plans;
 - e. Sheltering arrangements; or
 - f. Manuals for security or firesafety personnel, emergency equipment, or security or firesafety training.
2. A security or firesafety system plan or portion thereof for:
- a. Any property owned by or leased to the state or any of its political subdivisions; or
 - b. Any privately owned or leased property held by an agency is confidential and exempt from s. 119.07(1) and s. 24(a), Art. I of the State Constitution. This exemption is remedial in nature, and it is the intent of the Legislature that this exemption apply to security or firesafety system plans held by an agency before, on, or after the effective date of this paragraph. This paragraph is subject to the Open Government Sunset Review Act in accordance with s. 119.15 and shall stand repealed on October 2, 2023, unless reviewed and saved from repeal through reenactment by the Legislature.
3. Information made confidential and exempt by this paragraph may be disclosed:
- a. To the property owner or leaseholder;
 - b. In furtherance of the official duties and responsibilities of the agency holding the information;
 - c. To another local, state, or federal agency in furtherance of that agency’s official duties and responsibilities; or
 - d. Upon a showing of good cause before a court of competent jurisdiction.
- (b) 1. Building plans, blueprints, schematic drawings, and diagrams, including draft, preliminary, and final formats, which depict the internal layout and structural elements of a building, arena, stadium, water treatment facility, or other structure owned or operated by an agency are exempt from s. 119.07(1) and s. 24(a), Art. I of the State Constitution.
2. This exemption applies to building plans, blueprints, schematic drawings, and diagrams, including draft, preliminary, and final formats, which depict the internal layout and structural elements of a building, arena, stadium, water treatment facility, or other structure owned or operated by an agency before, on, or after the effective date of this act.
3. Information made exempt by this paragraph may be disclosed:
- a. To another governmental entity if disclosure is necessary for the receiving entity to perform its duties and responsibilities;
 - b. To a licensed architect, engineer, or contractor who is performing work on or related to the building, arena, stadium, water treatment facility, or other structure owned or operated by an agency; or
 - c. Upon a showing of good cause before a court of competent jurisdiction.
4. The entities or persons receiving such information shall maintain the exempt status of the information.

FOR CITY USE ONLY

City Representative Authorizing Distribution:

Printed Name: _____

Title: _____

Signature: _____

Signature Date: _____

Exempt Documents Provided: _____

Date Exempt Documents Provided: _____

Method of Delivery: _____

Notes: _____



Project/File: 2270451002
Addendum No.: 17
Date: April 16, 2024
To: Michael Acosta
Contract No.: 2270451002

This addendum is to be read with and constitutes part of the tender document.

INSTRUCTIONS:

1. Amend your copy of the tender/quotation/proposal in accordance with the detail below.
2. Failure to confirm receipt of this addendum may result in a non-compliant bid.

DETAILS OF THE ADDENDUM:

SPECIFICATION UPDATES

- 00 01 10 – Table of Contents
 - Identified revised and new specification sections.
- 01 25 00 - Substitution Procedures
 - Added article 3.2, and renumbered subsequent articles.
- 03 05 16 - Underslab Vapor Barrier
 - Added paragraph 2.1.A.5 and renumbered subsequent paragraphs.
- RFI 2.6.d - 04 72 00 – Cast Stone Masonry
 - Section deleted
- 05 50 00 - Metal Fabrications
 - RFI 14.7 - revised paragraphs 1.1.B, 1.1.C, 1.4.E, 1.5.B, 2.3.A, 2.3.B, 2.3.D, 2.3.E, and 2.4.
- 05 52 13 - Pipe and Tube Railings
 - RFI 14.6 - Revised paragraph 1.1.A.
- 06 10 00 - Rough Carpentry

- RFI 8.9 - Added paragraph 2.3.A and renumbered subsequent paragraphs.
- 06 42 00 – Wood Paneling
 - RFI 2.6.e - Section deleted.
- 07 05 53 - Fire and Smoke Assembly Identification
 - Added 2.1.A.3 and renumbered subsequent paragraphs.
- 07 12 00 – Built Up Bituminous Waterproofing
 - RFI 2.11.h - Added Specification.
- 07 21 00 - Thermal Insulation
 - RFI 8.9 - Revised paragraphs 1.1.A, 2.1.B, 2.2.A.
 - Added paragraph 1.1.C, 2.1.C, 2.1.D, 2.4.B.5.a, and 2.4.B.6, renumbered subsequent paragraphs.
 - Added article 2.3.
- 07 21 19 - Foamed-In-Place Insulation
 - RFI 7.41 - Revised paragraph 1.1.A.
- 07 26 00 - Vapor Retarders
 - RFI 7.42 - Revised paragraphs 1.3.B.1, 1.3.B.2 and 2.1.A.
- 07 41 13 - Metal Roof Panels
 - RFI 7.35 - Revised paragraphs 2.1.A and 2.1.B.
- 07 42 13 - Metal Wall Panels
 - RFI 7.42 - Added paragraph 2.1.B and 2.1.C.
 - Revised paragraph 1.2.C and 1.2.D.
- 07 42 43 - Composite Wall Panels
 - RFI 7.42 - Revised paragraph 1.2.A.
 - Added paragraph 2.1.A.2 and renumbered subsequent paragraphs.
- 07 54 00 - Thermoplastic Membrane Roofing

- Added paragraphs 2.1.A.1 and 2.1.A.3 and renumbered subsequent paragraphs.
 - Revised paragraph 2.6.K.4.a.
- 08 11 13 - Hollow Metal Doors and Frames
 - Added paragraphs 2.1.A.2.a and 2.1.A.2.b, and renumbered subsequent paragraphs.
- 08 14 16 – Flush Wood Doors
 - RFI 2.12.f - Section deleted.
- 08 31 13 - Interior Non-Rated Access Doors and Panels
 - Revised paragraph 2.1.A.
- 08 33 13 - Coiling Counter Doors
 - Revised paragraph 2.1.A.2.
- 08 41 26 – All-Glass Entrances and Storefronts
 - RFI 2.12.d - Section deleted.
- 08 42 29 - Automatic Entrances
 - RFI 2.12.e - Added paragraphs 2.1.A.2, and renumbered subsequent paragraphs.
- 08 43 13 - Aluminum-Framed Storefronts
 - RFI 2.12.d - Added Specification.
- 08 71 00 – Door Hardware
 - Added sets 01a and 02a.
- 08 83 00 – Mirrors
 - RFI 13.4 - Section deleted.
- 08 91 00 – Louvers
 - Added paragraph 2.1.A.2, and renumbered subsequent paragraphs.
- 09 21 16 - Gypsum Board Assemblies
 - RFI 8.9 - Added paragraphs 2.2.E.4.a and c, and renumbered subsequent paragraphs.
 - Added paragraphs 2.3.B.1.b and c, and renumbered subsequent paragraphs.

- 09 41 00 – Architectural Wood Casework
 - RFI 5.2.2.a - Section deleted.
- 09 51 00 - Acoustical Ceilings
 - Added paragraph 2.1.A.3, and renumbered subsequent paragraphs.
- 09 54 23.11 - Exterior Linear Metal Ceiling System
 - RFI 6.2.g - Revised paragraph 2.1.A.
 - Added paragraph 2.
- 09 63 13 – Brick Flooring
 - RFI 5.2.2.b - Section deleted.
- 09 65 00 - Resilient Flooring
 - Revised 2.1.B.8.
 - Added paragraph 2.3.B.1.a, and renumbered subsequent paragraphs.
- 09 67 23 - Resinous Flooring
 - RFI 2.6.h - Section deleted.
- 09 72 00 - Wall Coverings
 - RFI 2.6.i - Section deleted.
- 09 84 00 - Sound-Absorbing Wall and Ceiling Units
 - RFI 5.2.e - Added Specification.
- 10 22 13 - Wire Mesh Partitions
 - RFI 5.2.f - Revised paragraph 2.1.A.1.
- 10 22 39 - Folding Panel Partitions
 - RFI 7.47 - Revised paragraphs 2.1.A and 2.2.G.1.
- 10 26 01 - Wall and Corner Guards
 - RFI 6.2.i - Revised paragraph 2.1.A.
- 10 44 00 - Fire Protection Specialties

- RFI 7.48 - Revised all of 2.1.B.
 - Revised paragraph 2.4.B.1.
- 10 51 29 – Phenolic Lockers
 - RFI 5.2.g - Added Specification.
- 11 30 13 - Residential Appliances
 - RFI 13.6 - Revised paragraphs 2.1.B, 2.1.B.5.a, 2.1.C, 2.1.C.3, 2.1.C.5.a, 2.1.D, 2.1.D.3, 2.1.D.7.a, 2.1.D.8.b, 2.1.E, 2.1.E.1, 2.1.E.3, and 2.1.E.5.a.
 - Added articles 2.1.D, 2.1.F, 2.1.G, and 2.1.H.
- 12 21 13 – Horizontal Louver Blinds
 - RFI 2.16 - Added Specification.
- 12 24 00 – Window Shades
 - RFI 2.16 - Section deleted.
- 23 05 00 – Common Work For HVAC
 - RFI 14. 4 - Removed language referencing seismic requirements.
- 23 05 29 – Hangers and Supports for HVAC Piping and Equipment
 - RFI 14. 4 - Removed language referencing seismic requirements.
- 23 05 48 – Vibration and Seismic Controls
 - RFI 14. 4 - Removed language referencing seismic requirements.
- 2 309 00 – Instrumentation and Control for HVAC
 - RFI 6. 4 q – Added section to clarify building management system specifications.
- 23 21 33 – HVAC Piping
 - RFI 14. 4 - Removed language referencing seismic requirements.
- 23 34 16 – HVAC Fans
 - RFI 14. 4 - Removed language referencing seismic requirements.
- 23 34 33.16 – Industrial Air Curtains

- RFI 14. 4 - Removed language referencing seismic requirements.
- 23 34 39 – High-Volume, Low-Speed Fans
 - RFI 14. 4 - Removed language referencing seismic requirements.
- 23 81 29 – Variable-Refrigerant-Flow HVAC Systems
 - RFI 14. 4 - Removed language referencing seismic requirements.
- 27 00 00 and 28 00 00 – Spec sections
 - RFI 14.3 - Removed Buy America requirements
- 26 32 13 – Engine Generator
 - Updated manufacturers and performance specification
- 26 36 00 Transfer Switches
 - RFI 14. 4 - Removed language referencing seismic requirements.
- 27 05 29 Hangers and Supports for Communications
 - RFI 14. 4 - Removed language referencing seismic requirements.
- 27 41 00 – Audio Visual Systems
 - RFI 9.1 & 9.2 Removed room numbers/names, updated TV language
- 31 10 00 – Clearing and Grubbing
 - RFI 7.16.f - Added Specification
- 31 11 00 – Limerock Base Course and Stabilized Subgrade
 - RFI 5.2.d - Added Specification
- 31 31 16 - Termite Control
 - Added Specification

ARCHITECTURAL DRAWING UPDATES

- G013 – General Notes
 - RFI 3.10 – Note 8 deleted

- A000 – Architectural Site Plan
 - RFI 1.9 – Gazebo & associated path and bollard lights removed
 - RFI 2.6k - Flagpole located
 - Garden removed, sidewalks updated
 - Location of monument sign updated
 - RFI 2.6n - Bike parking location updated
 - Bollards at generator pad shifted outwards to manage service clearances
 - RFI 2.4 – Ground face CMU finish provided
- A010 – Canopy Plans
 - RFI 3.5 – canopy column to be painted
 - RFI 3.12 – Custom gate/ fence removed . fence detail updated to BOD Ameristar Perimeter security MAGESTIC 3 Rail.
 - RFI 2.5b – Added rain chain basis of design to 3/A010
- A011 – Canopy Section & Details
 - RFI 3.5 – canopy column to be painted
 - RFI 3.12 – Custom gate/ fence removed . fence detail updated to BOD Ameristar Perimeter security MAGESTIC 3 Rail.
 - RFI 2.5b – Added rain chain basis of design to 1/A011
- A012 – Courtyard Fence Detail
 - RFI 3.12 – Custom gate/ fence removed . fence detail updated to BOD Ameristar Perimeter security MAGESTIC 3 Rail.
- A013 – Courtyard Detail
 - RFI 2.11 h – liquid applied bituminous water proofing provided at splash basin per detail 3/A013
- A014 – Yard Storage and Pipe Town
 - architectural drawing for yard storage and pipe town area provided
 - RFI 10.11 – Yard elevations provided

- RFI – 10.12 – yard area drawing and finishes updated
- A015 – Covered Parking
 - architectural drawing for yard storage and pipe town area provided
- A016 – Trash Enclosure
 - RFI 2.5 & 13.1 – Trash enclosure drawing provided
- A101A – Architectural Plan – Level 1 – Sector A
 - Removed bollards at corners of building
 - Updated tags to clarify exterior assemblies as ovals
 - RFI 2.12a Knox box provided.
 - RFI 2.17 – Added casework and interior elevation at Room 117 (11/A510)
 - RF1 8.12 – IT closet room and door relabeled 100.1.
 - RFI 13.3 – Transaction window at Room 100/104 updated
- A101B – Architectural Plan – Level 1 – Sector B
 - Updated TP1 tag to clarify it is an exterior assembly
 - Update walls at warehouse to be TP4
 - RFI 2.12e- door tags provided
 - RFI 8.11 – openings tagged
 - RFI 7.23 - Added interior elevation tag at Room 164 for new 8/A520 interior elevation
 - RFI 13.3 – Transaction window at Room 170 updated
- A101C – Architectural Plan – Level 1 – Sector C
 - Updating warehouse exterior walls to be TP4
 - Updating nomenclature for clarity of warehouse conditioned- unconditioned demising wall to be WW1
 - RFI 8.14 – interior wall at room 176 updated to c18 .C18 top head and sill detail updated
- A103C – Architectural Plan – Main roof – Sector C

- RFI 7.33 – General Roof plan notes 4 – “painted wood blocking “ updated to “ Fire Retardant wood blocking”
- A131 – Finish Plan – Level 1 – Overall
 - RFI 2.11a, RFI 6.1 – Finish legend revised to show LVT-4
 - RFI 2.16, RFI 11.4 – Removed reference to WT-1 in finish plan general notes
- A131A – Finish Plan – Level 1 – Sector A
 - RFI 2.16, RFI 11.4 – Removed reference to WT-1 in finish plan general notes
 - RFI 2.17– Added casework and finish type at Room 117
- A131B – Finish Plan – Level 1 – Sector B
 - RFI 2.16, RFI 11.4 – Removed reference to WT-1 in finish plan general notes
 - Design coordination – updated Stair 1 finish tag with tread finish
- A131C – Finish Plan – Level 1 – Sector C
 - RFI 2.16, RFI 11.4 – Removed reference to WT-1 in finish plan general notes
 - RFI 7.20 – Bumper guards removed on south concrete wall at room 177, added on east gyp partition of room 176 facing 177
- A132B – Finish Plan – Low Roof – Sector B
 - RFI 11.6 – Added sheet with Sector B mezzanine finish plan
- A200 – Exterior Assemblies
 - TP1- Update terminology of vapor retarder, continuous insulation, provided air space
 - TP2- Provided vertical hat channels ILO manufacturer provided girts. Update terminology of vapor retarder- shifted to inside face of tilt panel, fluid applied. Continuous insulation to be unfaced mineral wool board.
 - TP3 – Updated detail to clarify this is a demising wall with interior spaces on either side. No vapor retarder or insulation required on this assembly.
 - TP4- New assembly – 11.25” tilt wall
 - CC1 – Updated terminology for clarity. Updated vapor retarder and continuous insulation. Provided air space.
 - CC2- Updated terminology for clarify

- PPX & MPx -Updated vapor retarder specification, FG insulation, continuous insulation
- CP1 & MD2 – included Polyiso to clarify type of rigid insulation
- WW1 – Clarifying notes on usages of this assembly. Mineral board ILO rigid, foil faced batts ILO air/vapor barrier
- WR1 - Clarifying notes on usages of this assembly. Fire Rated OSB ILO plywood, foil faced batts ILO air/vapor barrier
- WR2 - Clarifying notes on usages of this assembly. Noted FG insulation batting to be unfaced.
- A201 – Exterior Elevations – Sector A
 - CC1 updated to match clarifying nomenclature.
 - Bollards at building corners removed
 - RFI 7.44 cast iron boot added to all downspouts
- A202 – Exterior Elevations – Sector A
 - RFI 9.6 - Missing sheet from big package provided
 - RFI 7.44 cast iron boot added to all downspouts
 - Downspout at Door 175 b moved to avoid card reader
- A203 – Exterior Elevations – Sector B & C
 - TP4 assembly update
 - Tilt panel mistakenly labeled updated to MP1 exterior assembly type
 - CC1 tag updated for clarity
 - RFI 7.44 cast iron boot added to all downspouts
- A302 – Building Sections – Sector B & C
 - Updating tags for WW1, WR2, MP1, TP4
- A310 – Wall Sections – Sector A
 - CC1 tag updated for clarity
- A312 – Wall Sections – Sector B
 - CC1 tag updated for clarity

- A313 – Wall Sections – Sector B
 - CC1 tag updated for clarity
- A314 – Wall Sections – Sector B & C
 - CC1 tag updated for clarity
 - Warehouse wall assembly updated to TP4
- A321 – Exterior Section Details
 - RFI 8.8 - Attachment patterns between blocking and angels provided
 - Fluid Applied bituminous waterproofing clarified on foundations
- A322 – Exterior Section Details
 - Updated detailing on exterior wall assembly type CC2
- A332 – Plan Details
 - RFI 7.32 - Removed detail 4/A332
 - RFI 7.33 - Removed continuous embed plate from detail 3/A332
- A411 – Stair & Rail Details
 - RFI 14.6 – Rail type updated to 1.5” Pipe Rail throughout.
- A412 – Stair & Rail Details
 - RFI 14.6 – Rail type updated to 1.5” Pipe Rail throughout.
- A501– Enlarged Toilet Rooms – Sector A
 - RFI 10.17, 13.4 – Added basis of design to toilet accessories in Specialty Equipment Schedule
- A502 - Enlarged Toilet Rooms – Sector A
 - RFI 10.17, 13.4 – Added basis of design to toilet accessories in Specialty Equipment Schedule
 - RFI 10.18 – Added soap and paper towel dispensers within ADA stalls at rooms 137 and 139 (4/A502)
- A503 – Enlarged Toilet Rooms – Sector B

- RFI 10.17, 13.4 – Added basis of design to toilet accessories in Specialty Equipment Schedule
- RFI 10.18 – Added soap and paper towel dispensers within ADA stalls at rooms 137 and 139 (4/A502)
- RFI 7.31 – Added locker base at all lockers in interior elevations
- A504 – Enlarged Toilet Rooms – Sector B
 - RFI 10.17, 13.4 – Added basis of design to toilet accessories in Specialty Equipment Schedule
- A505 – Enlarged Plans
 - Update assembly names for WW1, WR1
- A510 – Interior Elevations – Sector A
 - RFI 2.17 – Added elevation 11/A510
 - RFI 13.3a,13.3b – Updated Staff Assistant Room 104 transaction window interior elevation (1/A510)
 - Design Coordination – updated casework legend
 - RFI 2.11e, 13.6 – Added basis of design to equipment in Specialty Equipment Schedule
- A520 – Interior Elevations – Sector B
 - RFI 7.23 – Added elevation 8/A520
 - Design Coordination - Relocated 9/A520 from sheet A510 (Sector A) to sheet A520 (Sector B)
 - RFI 13.3a, 13.3b – updated Electronic Shop Transaction Counter interior elevation (9/A520)
 - Design Coordination – updated casework legend
 - RFI 2.11e, 13.6 – Added basis of design to equipment in Specialty Equipment Schedule
- A601 – Partition Types
 - RFI 8.13 – top TT1 and Base BT1 detail removed from set.
 - RFI 8.14 – wall type C18, detail TB5 and BB3 added to partition schedule
- A611 – Door Schedule

- RFI 2.11d -GL updated to tempered glass
- RFI 2.12e – Auto door Operator provided at door locations. Spec Updated
- Note added – All glazing in operable doors to be tempered
- RFI 2.14 door panel types FLD and HL removed from set
- RF1 7.40 head, jamb and sill detail updated
- RFI 8.10 – Door 191 added to door schedule
- A613- Door Details
 - RF1 7.40 head, jamb and sill detail updated
- A641 – Interior Finish Schedules, Legends, and Details
 - RFI 2.11a – Updated Interior Materials Schedule
 - RFI 2.11b – Added solid surface window sill detail
 - RFI 2.16, RFI 11.4 – Removed reference to WT-1 in finish plan general notes
- A661 – Signage and Graphics
 - RFI 13.2 – Added interior signage material
- A801 – Millwork Details
 - RFI 13.3a, 13.3b, 13.3c, 13.3d – updated 3/A801 staff assistant transaction window
 - RFI 13.3a, 13.3b– added 12/A801 electronic shop transaction counter section
 - RFI 7.23 – Updated 6/A801, 7/A801, and added 11/A801 for casework detail clarification

CIVIL DRAWING UPDATES

- C101 – Cover Sheet
 - Added revision notes
- C103 – Site Plan
 - RFI 1.8, 1.10, 1.12, 5.6, 7.27, 12.5, 13.5 - rev legend, added fence/privacy wall labels, add curb labels, remove garden, add site furnishings, rev heavy duty concrete extents
- C104 – Grading and Drainage Plan

- RFI 1.7, - added stamped concrete area, rev legend
- C105 – Grading and Drainage Plan
 - RFI 12.8 - updated cross sections to show extent of sod
- C108 – Sanitary Sewer Plan and Profile
 - RFI 5.5 - rev reclaimed main to terminate with hose bib
- C114 – Paving and Grading Details
 - RFI 1.12, 7.26 - added typical shell path detail, removed concrete ribbon curb detail
- C115 – Drainage Construction Details
 - RFI 7.28 - added CS name to CS table
- C119 – Utility Details
 - RFI 5.5 - added hose bid detail
- C121 – Best Management Practices Plan
 - RFI 5.12 - rev BMPs (Best Management Practices) and labels

STRUCTURAL DRAWING UPDATES

- S100A – Structural Plan – Foundation – Sector A
 - RFI 3.11, 10.1 - Clarified sections, monumental sign support and tilt panel thickness.
- S100B – Structural Plan – Foundation – Sector B
 - RFI 10.1 - Clarified tilt panel thickness
- S100C – Structural Plan – Foundation – Sector C
 - RFI 10.1 - Clarified tilt panel thickness
- S101C – Structural Plan – Level 1 – Sector C
 - RFI 2.3 - Clarified steel tubes at fence
- S120 – Yard Storage Plan and Details
 - RFI 3.11 - Provided detail for monumental sign 3/S120

- S200 – Building Sections and Stair Details
 - RFI 2.3 - Provided elevation of steel frame on E/S200
- S300 – Foundation Plans, Sections and Schedules
 - RFI 1.15, 10.5 - Provided missing base plate schedule
- S400 – Typical Slab on Grade Details
 - RFI 15.1 thru 15.5 – Clarified Housekeeping Pad Detail 6/S400
- S420 – Typical Tilt-Up Details
 - RFI 10.3, 10.4 – Clarified panel to panel connections
-

MECHANICAL DRAWING UPDATES

- M201A – Mechanical Ductwork Plan – Level 1 – Sector A
 - Updated tag to clarify split system service to IT Room 100.1
 - Updated room name from IT Room 117A to IT Room 100.1
 - Noted smoke detectors in Keynote 23.06.
- M201B– Mechanical Ductwork Plan – Level 1 – Sector B
 - Noted smoke detectors in Keynote 23.06.
- M301A – Mechanical Piping Plan – Level 1 – Sector A
 - Updated room name from IT Room 117A to IT Room 100.1
 - Added CO2 sensor to Large Conference Room/Training Room 117
- M700 – Mechanical Schedules Sheet 1 of 2
 - Updated Split System Air Conditioning Schedule, "Room(s) Served" column, to show IT Room 100.1 instead of IT Room 117.

PLUMBING AND FIRE PROTECTION DRAWING UPDATES

- P100A – Plumbing - Underslab Plan - Sector A

- Moved piping for sink relocation
- P400A – Plumbing – Enlarged Plans – Sector A
 - Moved piping for sink relocation

ELECTRICAL DRAWING UPDATES

- E002 – Electrical Notes
 - Updated electrical drawing list to reflect added sheets and sheet name changes.
- E002 – Electrical Notes
 - RFI 1.13 - Changed NFPA 70 date from 2019 to 2020.
- E201 – Electrical Site Plan
 - RFI 2.6k - Provided power for updated lighting including flag pole lighting fixture, monument signage lighting, and covered parking lighting
 - RFI 5.7 - Provided power for (2) Aeration devices in Pond 1 and 2.
 - RFI 3.7 - Clarified fire alarm underground conduit pathway.
 - RFI 13.8 - Provided additional details on primary power conduits and duct bank route.
 - RFI 13.9 - Updated keynote 28.6 to include additional details on conduit routing.
- E301A – Power Plan – Level 1 – Sector A
 - RFI 2.6k - Provided power for updated lighting fixture layout including flag pole lighting fixture, monument signage lighting, and covered parking lighting
 - RFI 13.3d - Provided power and associated keynote for integrated intercom at transaction window.
 - RFI 14.15 - Provided grounding bus bar and associated keynote in Main Electrical 111, Main Emergency Electrical 119A, and Electrical 115.
- E301C – Power Plan – Level 1 – Sector C
 - RFI 14.15 - Provided grounding bus bar and associated keynotes in Electrical 180 and adjacent IT room.
- E311A – Mechanical Power Plan – Level 1 – Sector A
 - Provided circuiting clarification for VRF-22A.

- E401A – Systems Plan – Level 1 – Sector A
 - RFI 3.12b - Provided card reader at security gate.
 - RFI 14.15 - Provided additional low voltage design details
- E401B – Systems Plan – Level 1 – Sector B
 - RFI 14.15 - Provided additional low voltage design details
- E401C – Systems Plan – Level 1 – Sector C
 - RFI 14.15 - Provided additional low voltage design details
- E510 – Telecommunications Cabling Details
 - RFI 14.15 - Provided Low Voltage Design Details
- E511 – Telecommunications Infrastructure Details
 - RFI 14.15 - Provided Low Voltage Design Details
- E512 – Telecommunications Infrastructure Details
 - RFI 14.15 - Provided Low Voltage Design Details and Access Control and Security Camera Riser Diagrams
- E603 – Fire Alarm and Telecom Riser Diagrams
 - RFI 3.7- Updated fire alarm riser diagram including removal of fire alarm path going "to garage"
 - RFI 14.15 - Provided telecommunications riser and grounding riser diagrams
- E700 – Electrical Schedules
 - RFI 5.7 - Panel schedules updated to reflect power for (2) Aeration devices in Pond 1 and 2.

LIGHTING DRAWING UPDATES

- EA002 – LUMINAIRE SCHEDULE
 - RFI 2.6.k - Added flagpole lighting fixture to the luminaire schedule
- EA100 – SITE LIGHTING – OVERALL

- RFI 2.6.k - Added flagpole lighting fixture to the drawings
- Updated monument signage lighting
- Updated mounting height of fixtures in Yard Storage
- Updated locations of lighting fixtures in Covered Parking
- RFI 1.9 / 12.10 - Removed bollards leading to Gazebo that was removed
- EA101 – SITE LIGHTING – EAST
 - RFI 2.6.k - Added flagpole lighting fixture to the drawings
 - Updated monument signage lighting
- EA102 – SITE LIGHTING – WEST
 - Updated mounting height of fixtures in Yard Storage
 - Updated locations of lighting fixtures in Covered Parking
 - RFI 1.9 / 12.10 - Removed bollards leading to Gazebo that was removed
- EA103 – SITE LIGHTING – YARD
 - Updated mounting height of fixtures in Yard Storage
 - Updated locations of lighting fixtures in Covered Parking
- EA204 – LIGHTING EXTERIOR ELEVATIONS – SECTOR B/C
 - Updated locations of fixtures above garage doors

LIGHTING DRAWING UPDATES

- Sheet 1 Number – Sheet Name
 - Description of change

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26 56 19 LED EXTERIOR LIGHTING

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- 27 05 26 GROUNDING AND BONDING FOR COMMUNICATIONS
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- 27 05 29 HANGERS AND SUPPORTS FOR COMMUNICATIONS
- 27 05 34 FLOOR BOXES FOR ELECTRICAL AND COMMUNICATIONS
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- 27 05 53 IDENTIFICATION OF COMMUNICATION SYSTEMS
- 27 08 00 TESTING OF COMMUNICATION SYSTEMS
- 27 11 00 COMMUNICATIONS EQUIPMENT ROOM FITTINGS
- 27 11 23 COMMUNICATIONS CABLE MANAGEMENT AND LADDER RACK
- 27 13 13 COMMUNICATIONS COPPER BACKBONE CABLING
- 27 13 23 COMMUNICATIONS OPTICAL FIBER BACKBONE CABLING
- 27 15 13 COMMUNICATIONS COPPER HORIZONTAL CABLING
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- 27 15 33 COMMUNICATIONS COAXIAL HORIZONTAL CABLING
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28 31 50 NOT USED

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32 12 16 02911 ASPHALTIC CONCRETE

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32 16 00 CONCRETE CURBS GUTTERS MANHOLE FRAMES STORM INLETS

32 17 23 PAVEMENT MARKING STRIPING AND SIGNS

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SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedural requirements for proposed substitutions.

1.2 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Submittal procedures, coordination.
- B. Section 01 60 00 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.
- C. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Restrictions on emissions of indoor substitute products.

1.3 DEFINITIONS

- A. Substitutions: See General Conditions for definition.

1.4 REFERENCE STANDARDS

- A. CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage); Current Edition.
- B. CSI/CSC Form 13.1A - Substitution Request (After the Bidding/Negotiating Phase); Current Edition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

- A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:

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1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
 2. Agrees to provide the same warranty for the substitution as for the specified product.
 3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
 4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
 5. Waives claims for additional costs or time extension that may subsequently become apparent.
 6. Agrees to reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
1. Note explicitly any non-compliant characteristics.
- C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
1. Forms indicated in the Project Manual are adequate for this purpose, and must be used.
- D. Limit each request to a single proposed substitution item.
1. Submit an electronic document, combining the request form with supporting data into single document.

3.2 SUBSTITUTION PROCEDURES DURING PROCUREMENT

- A. Submittal Time Restrictions:
1. Owner will consider requests for substitutions only if submitted at least 10 days prior to the date for receipt of bids.
- B. Submittal Form (before award of contract):
1. Submit substitution requests by completing CSI/CSC Form 1.5C - Substitution Request. See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.

3.3 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

- A. Submittal Form (after award of contract):
1. Submit substitution requests by completing CSI/CSC Form 13.1A - Substitution Request. See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.

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- B. Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
 - 1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.
 - 2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
 - 3. Bear the costs engendered by proposed substitution of:
 - a. Owner's compensation to the Architect for any required redesign, time spent processing and evaluating the request.
 - b. Other construction by Owner.
 - c. Other unanticipated project considerations.
- C. Substitutions will not be considered under one or more of the following circumstances:
 - 1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
 - 2. Without a separate written request.

3.4 RESOLUTION

- A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
- B. Architect will notify Contractor in writing of decision to accept or reject request.

3.5 ACCEPTANCE

- A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

3.6 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.
- B. Include completed Substitution Request Forms as part of the Project record. Include both approved and rejected Requests.

END OF SECTION 01 25 00

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SECTION 03 05 16 - UNDERSLAB VAPOR BARRIER

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Sheet vapor barrier under concrete slabs on grade.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Preparation of subgrade, granular fill, placement of concrete.

1.3 REFERENCE STANDARDS

- A. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2018a.
- B. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs; 2017.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products.
- C. Test Data: Submit report of tests showing compliance with specified requirements.
- D. Samples: Submit samples of underslab vapor barrier to be used.
- E. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent construction.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Underslab Vapor Barrier:

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1. Water Vapor Permeance: Not more than 0.010 perms, maximum.
2. Complying with ASTM E1745 Class A.
3. Thickness: 15 mils.
4. Basis of Design:
 - a. Stego Industries LLC; Stego Wrap Vapor Barrier (15-mil): www.stegoindustries.com/#sle.
5. Other acceptable manufacturers:
 - a. Henry Company: www.henry.com/#sle.
 - b. W. R. Meadows, Inc.: www.wrmeadows.com/#sle.
6. Substitutions: See Section 01 60 00 - Product Requirements

- B. Accessory Products: Vapor barrier manufacturer's recommended tape, adhesive, mastic, etc., for sealing seams and penetrations in vapor barrier.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surface over which vapor barrier is to be installed is complete and ready before proceeding with installation of vapor barrier.

3.2 INSTALLATION

- A. Install vapor barrier in accordance with manufacturer's instructions and ASTM E1643.
- B. Install vapor barrier under interior slabs on grade; lap sheet over footings and seal to foundation walls.
- C. Lap joints minimum 6 inches.
- D. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions.
- E. No penetration of vapor barrier is allowed except for reinforcing steel and permanent utilities.
- F. Repair damaged vapor retarder before covering with other materials.

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SECTION 05 50 00 - METAL FABRICATIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Shop fabricated steel items.
- B. Not used.
- C. Not used.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 05 31 00 - Steel Decking: Bearing plates for metal deck bearing, including anchorage.
- C. Section 05 51 00 - Metal Stairs.
- D. Section 05 52 13 - Pipe and Tube Railings.
- E. Section 09 91 13 - EXTERIOR PAINTING: Paint finish.
- F. Section 09 91 23 - Interior Painting: Paint finish.

1.3 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- E. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.

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- F. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.
- G. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2014.
- H. ASTM A325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength (Metric); 2014.
- I. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.
- J. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2022.
- K. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
- L. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.
- M. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2022).
- N. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel AC172; 2019.
- O. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.
- P. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.
- Q. SSPC-SP 2 - Hand Tool Cleaning; 2018.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. 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. Specimen warranty.
- C. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

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D. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.

E. Not used.

1.5 QUALITY ASSURANCE

A. Design metal fabrications under direct supervision of a Professional Structural Engineer Engineer experienced in design of this Work and licensed in the State in which the Project is located.

B. Not used.

PART 2 PRODUCTS

2.1 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.

C. Plates: ASTM A283.

D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.

E. Slotted Channel Framing: ASTM A653/A653M, Grade 33.

F. Slotted Channel Fittings: ASTM A1011/A1011M.

G. Bolts, Nuts, and Washers: ASTM A325 (ASTM A325M) Type 1, plain.

H. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

I. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

J. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.2 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members by continuous welds.

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- D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.3 FABRICATED ITEMS

- A. Not used.
- B. Not used.
- C. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; galvanized finish.
- D. Not used.
- E. Not used.
- F. Slotted Channel Framing: Fabricate channels and fittings from structural steel complying with the referenced standards; factory-applied, rust-inhibiting thermoset acrylic enamel finish.

2.4 NOT USED

2.5 FINISHES - STEEL

- A. Prime paint steel items.
 - 1. Exceptions: Galvanize items to be embedded in concrete and as indicated.
 - 2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.
- E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.

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- F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.6 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.2 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete.

3.3 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components as indicated on drawings.
- D. Perform field welding in accordance with AWS D1.1/D1.1M.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed , except surfaces to be in contact with concrete.

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3.4 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION 05 50 00

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SECTION 05 52 13 - PIPE AND TUBE RAILINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Equipment platform railings and guardrails.

1.2 RELATED REQUIREMENTS

- A. Section 09 21 16 - Gypsum Board Assemblies: Placement of backing plates in stud wall construction.
- B. Section 09 91 23 - Interior Painting: Paint finish.

1.3 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2021.
- C. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.
- D. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021.
- E. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2022).
- F. AWS D1.6/D1.6M - Structural Welding Code - Stainless Steel; 2017, with Amendment (2021).
- G. AWS C3.4M/C3.4 - Specification for Torch Brazing; 2016.
- H. AWS C3.5M/C3.5 - Specification for Induction Brazing; 2016, with Amendment (2017).
- I. AWS C3.9M/C3.9 - Specification for Resistance Brazing; 2020.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

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- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
 - 2. Include the design engineer's seal and signature on each sheet of shop drawings.
- C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated within the previous 12 months.

1.5 QUALITY ASSURANCE

- A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located, or personnel under direct supervision of such an engineer.
- B. Fabricator Qualifications:

PART 2 PRODUCTS

2.1 RAILINGS - GENERAL REQUIREMENTS

- A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.
- B. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935
- C. Allow for expansion and contraction of members and building movement without damage to connections or members.
- D. Dimensions: See drawings for configurations and heights.
 - 1. Top Rails and Wall Rails: 1-1/2 inches diameter, round.
 - 2. Intermediate Rails: 1-1/2 inches diameter, round.
 - 3. Posts: 1-1/2 inches diameter, round.
- E. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
 - 1. For anchorage to stud walls, provide backing plates, for bolting anchors.
 - 2. Posts: Provide adjustable flanged brackets.

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- F. Welded and Brazed Joints: Make visible joints butt tight, flush, and hairline; use methods that avoid discoloration and damage of finish; grind smooth, polish, and restore to required finish.
 - 1. Ease exposed edges to a small uniform radius.
 - 2. Welded Joints:
 - a. Carbon Steel: Perform welding in accordance with AWS D1.1/D1.1M.
 - b. Stainless Steel: Perform welding in accordance with AWS D1.6/D1.6M.
 - 3. Brass/Bronze Brazed Joints:
 - a. Perform torch brazing in accordance with AWS C3.4M/C3.4.
 - b. Perform induction brazing in accordance with AWS C3.5M/C 3.5.
 - c. Perform resistance brazing in accordance with AWS C3.9M/C3.9.

2.2 FABRICATION

- A. Accurately form components to suit specific project conditions and for proper connection to building structure.
- B. Fit and shop assemble components in largest practical sizes for delivery to site.
- C. Welded Joints:
 - 1. Exterior Components: Continuously seal joined pieces by intermittent welds and plastic filler. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
 - 2. Interior Components: Continuously seal joined pieces by intermittent welds and plastic filler.
 - 3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.2 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

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- B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- C. Install railings in compliance with ADA Standards for accessible design at applicable locations.
- D. Anchor railings securely to structure.
- E. Field weld anchors as indicated on drawings. Touch-up welds with primer. Grind welds smooth.
- F. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.4 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION 05 52 13

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SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Rough opening framing for doors, windows, and roof openings.
- B. Roof-mounted curbs.
- C. Roofing nailers.
- D. Preservative treated wood materials.
- E. Fire retardant treated wood materials.
- F. Communications and electrical room mounting boards.
- G. Concealed wood blocking, nailers, and supports.

1.2 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 03 54 00 - Cast Underlayment.
- C. Section 05 50 00 - Metal Fabrications: Miscellaneous steel connectors and support angles for wood framing.
- D. Section 07 62 00 - Sheet Metal Flashing and Trim: Sill flashings.
- E. Section 09 21 16 - Gypsum Board Assemblies: Gypsum-based sheathing.

1.3 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2022.
- C. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010 (Reapproved 2017).

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- D. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
- F. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022a.
- G. AWPA U1 - Use Category System: User Specification for Treated Wood; 2022.
- H. PS 1 - Structural Plywood; 2019.
- I. PS 2 - Performance Standard for Wood Structural Panels; 2018.
- J. PS 20 - American Softwood Lumber Standard; 2021.
- K. SPIB (GR) - Standard Grading Rules; 2021.
- L. WCLIB (GR) - Standard Grading Rules for West Coast Lumber No. 17; 2018.
- M. WWPA G-5 - Western Lumber Grading Rules; 2021.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide technical data on wood preservative materials and application instructions.
- C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.
- D. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

1.6 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

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- B. Provide five year manufacturer warranty for preservative materials.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
 3. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.
- B. Lumber fabricated from old growth timber is not permitted.

2.2 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Grading Agency: Southern Pine Inspection Bureau, Inc. (SPIB).
- B. Sizes: Nominal sizes as indicated on drawings, S4S.
- C. Moisture Content: S-dry or MC19.
- D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 1. Lumber: S4S, No. 2 or Standard Grade.
 2. Boards: Standard or No. 3.

2.3 CONSTRUCTION PANELS

- A. Sheathing: Oriented strand board wood structural panel; PS 2, with factory-applied fire-retardant treatment and fire-resistant cementitious facer.
 1. Grade: Structural 1 Sheathing.
 2. Bond Classification: Exposure 1.
 3. Performance Category: 5/8 PERF CAT.
 4. Span Rating: 40/20.
 5. Edges: Tongue and groove.

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6. Provide fastening guide on top panel surface with separate markings indicating fastener spacing for 16 inches and 24 inches on center, respectively.

7. Manufacturers:

- a. Flameproof Companies; MagTech: www.flameproof.com.
- b. Louisiana-Pacific Corporation; FlameBlock: www.lpcorp.com/#sle.
- c. Substitutions: See Section 01 60 00 - Product Requirements.

B. Wall Sheathing: See Section 09 21 16.

C. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

D. Other Applications:

- 1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
- 2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
- 3. Other Locations: PS 1, C-D Plugged or better.

2.4 ACCESSORIES

A. Fasteners and Anchors:

- 1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.

B. Water-Resistive Barrier: As specified in Section 07 25 00.

2.5 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.

- 1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
- 2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Fire Retardant Treatment:

- 1. Manufacturers:
 - a. Arch Wood Protection, Inc: www.wolmanizedwood.com/#sle.
 - b. Hoover Treated Wood Products, Inc: www.frtw.com/#sle.
 - c. Osmose, Inc: www.osmose.com/#sle.

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- d. Substitutions: See Section 01 60 00 - Product Requirements.
 - 2. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat all exterior rough carpentry items.
 - c. Do not use treated wood in direct contact with the ground.
 - 3. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat rough carpentry items as indicated .
 - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.
- C. Preservative Treatment:
- 1. Manufacturers:
 - a. Arch Wood Protection, Inc: www.wolmanizedwood.com/#sle.
 - b. Koppers Performance Chemicals, Inc: www.koppersperformancechemicals.com.
 - c. Viance, LLC: www.treatedwood.com.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.
 - 2. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
 - a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
 - b. Treat lumber in contact with roofing, flashing, or waterproofing.
 - c. Treat lumber in contact with masonry or concrete.
 - d. Treat lumber less than 18 inches above grade.

PART 3 EXECUTION

3.1 PREPARATION

- A. Coordinate installation of rough carpentry members specified in other sections.

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3.2 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.3 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.
- C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.
- D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.
- F. Provide the following specific non-structural framing and blocking:
 - 1. Cabinets and shelf supports.
 - 2. Wall brackets.
 - 3. Handrails.
 - 4. Grab bars.
 - 5. Towel and bath accessories.
 - 6. Wall-mounted door stops.
 - 7. Wall paneling and trim.
 - 8. Joints of rigid wall coverings that occur between studs.

3.4 ROOF-RELATED CARPENTRY

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

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- B. Provide wood curb at all roof openings except where specifically indicated otherwise. Form corners by alternating lapping side members.

3.5 INSTALLATION OF CONSTRUCTION PANELS

- A. Subflooring/Underlayment Combination: Glue and nail to framing; staples are not permitted.
- B. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 12 inches on center on all edges and into studs in field of board.
 - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
 - 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
 - 3. Install adjacent boards without gaps.
 - 4. Size: 48 by 96 inches, installed horizontally at ceiling height.

3.6 TOLERANCES

- A. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.7 CLEANING

- A. Waste Disposal: Comply with the requirements of Section 01 74 19.
 - 1. Comply with applicable regulations.
 - 2. Do not burn scrap on project site.
 - 3. Do not burn scraps that have been pressure treated.
 - 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION 06 10 00

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SECTION 07 05 53 - FIRE AND SMOKE ASSEMBLY IDENTIFICATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Identification markings for fire and smoke rated partitions, and fire rated walls.

1.2 RELATED REQUIREMENTS

- A. Section 09 91 23 - Interior Painting: Paint finish.

1.3 REFERENCE STANDARDS

- A. Florida Building Code - Building, Sixth Edition, 2020.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's printed product literature for each type of marking, indicating font, foreground and background colors, wording, and overall dimensions.
- C. Schedule: Completely define scope of proposed marking. Indicate location of affected walls and partitions, and number of markings.
- D. Samples: Submit two samples of each type of marking proposed for use, of size similar to that required for project, illustrating font, wording, and method of application.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.6 FIELD CONDITIONS

- A. Do not install adhered markings when ambient temperature is lower than recommended by label or sign manufacturer.
- B. Do not install painted markings when ambient temperature is lower than recommended by coating manufacturer.

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PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Partition Identification Labels:
1. Fire Wall Signs, Inc: www.firewallsigns.com.
 2. Safety Supply Warehouse, Inc: www.safetysupplywarehouse.com.
 3. Stencil Ease: www.stencilease.com.
 4. Substitutions: See Section 01 60 00 - Product Requirements.
 5. All signs covered by the work of this section shall be from the same manufacturer.

2.2 FIRE AND SMOKE ASSEMBLY IDENTIFICATION

- A. Regulatory Requirements: Comply with "Marking and Identification" requirements of "Fire-Resistance Ratings and Fire Tests" chapter of the IBC.
- B. Adhered Fire and Smoke Assembly Identification Signs: Printed vinyl sign with factory applied adhesive backing.
- C. Languages: Provide all markings in English and Spanish.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.

3.2 PREPARATION

- A. See Section 09 91 23 for substrate preparation for painted markings.

3.3 INSTALLATION

- A. Locate markings as required by the IBC.
- B. Install adhered markings in accordance with manufacturer's instructions.
- C. Install applied markings in accordance with Section 09 91 23.
- D. Install neatly, with horizontal edges level.

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- E. Protect from damage until Substantial Completion; repair or replace damaged markings.

END OF SECTION 07 05 53

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SECTION 07 12 00 - BUILT-UP BITUMINOUS WATERPROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Hot applied asphaltic waterproofing.

1.2 REFERENCE STANDARDS

- A. ASTM D41/D41M - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing; 2011 (Reapproved 2023).
- B. ASTM D449/D449M - Standard Specification for Asphalt Used in Dampproofing and Waterproofing; 2003 (Reapproved 2021).
- C. ASTM D2178/D2178M - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing; 2015a (Reapproved 2021).

1.3 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide properties of primer, bitumen, mastics, and characteristics of reinforcement fabric.
- C. Shop Drawings: Indicate flashings, control joints and expansion joints, sealing at openings, projections, penetrations, and reglets, and waterproofing of holes, slots, and sleeves.
- D. Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Installer's qualification statement.
- G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

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1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.5 FIELD CONDITIONS

- A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application until membrane has cured.

1.6 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Contractor shall correct defective work within a 5-year period after Date of Substantial Completion; remove and replace materials concealing waterproofing at no extra cost to Owner.
- C. Provide 5-year manufacturer warranty against failure of waterproofing to resist penetration of water, except where such failures are the result of structural failures of building.
 - 1. Hairline cracking of concrete due to temperature change or concrete shrinkage is not considered a structural failure.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design:
 - 1. Henry Company; Aqua-Bloc WB Elastomeric Asphalt Emulsion Waterproofing: www.henry.com.
- B. Other acceptable manufacturers:
 - 1. Barrett Company, LLC, member of Keene Family of Companies: www.barrettroofs.com/#sle.
- C. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 WATERPROOFING APPLICATIONS

- A. As indicated on drawings: Three plies of hot asphaltic waterproofing, glass fiber reinforcing fabric.

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2.3 HOT ASPHALTIC MATERIALS

- A. Asphalt: ASTM D449/D449M, Type I.
- B. Asphalt Primer: ASTM D41/D41M, compatible with substrate.
- C. Reinforcing Fabric: Glass mat, ASTM D2178/D2178M Type III, asphalt saturated.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify substrate surfaces are durable and free of matter detrimental to adhesion or application of waterproofing system.
- B. Verify that items that penetrate surfaces to receive waterproofing are securely installed.

3.2 PREPARATION

- A. Protect adjacent surfaces not designated to receive waterproofing.
- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions.
- C. Do not apply waterproofing to surfaces unacceptable to manufacturer.
- D. Apply mastic to seal penetrations, small cracks, or minor honeycomb in substrate.

3.3 INSTALLATION

- A. Prime surfaces in accordance with manufacturer's instructions.
- B. Install cant strips at inside corners.
- C. Apply moppings of bitumen and embed reinforcement in accordance with manufacturer's instructions.
- D. Apply hot bitumen at a temperature limited by equiviscous temperature (EVT) plus or minus 25 degrees F; do not exceed finish blowing temperature for four hours.
- E. Roll or press reinforcing fabric firmly into bitumen eliminating wrinkles, air pockets, or disruptions of continuity. Lap edges and ends 6 inches. Weather lap sheet materials.

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- F. Apply two plies of reinforcing fabric diagonal to inside corner interruptions to membrane.
- G. Extend membrane over cants and up intersecting surfaces at membrane perimeter minimum 6 inches above horizontal surface for first ply and 6 inches at subsequent plies laid in shingle fashion.
- H. Terminate top edge of membrane and flexible flashing under counter flashings, seal with mastic. Coordinate with metal flashing installation.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Upon completion of horizontal membrane installation, dam installation area in preparation for flood testing.
- C. Flood to minimum depth of 1 inch with clean water, and after 48 hours, inspect for leaks.
- D. If leaking is found, remove water, repair leaking areas with new waterproofing materials as directed by Architect; repeat flood test. Repair any damage to building caused by leaking.
- E. When area is proven watertight, drain water and remove dam.

3.5 PROTECTION

- A. Do not permit traffic over unprotected or uncovered membrane.

END OF SECTION 07 12 00

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SECTION 07 21 00 - THERMAL INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Board insulation at over roof sheathing and exterior wall behind gypsum board wall finish.
- B. Batt insulation in exterior wall construction.
- C. Batt insulation in ceiling construction.

1.2 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 07 21 19 - Foamed-In-Place Insulation: Plastic foam insulation other than boards.
- C. Section 07 54 00 - Thermoplastic Membrane Roofing: Insulation specified as part of roofing system.
- D. Section 09 21 16 - Gypsum Board Assemblies: Acoustic insulation inside walls and partitions.

1.3 REFERENCE STANDARDS

- A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
- C. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022a.
- D. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 °C; 2022.
- E. ASTM E2357 - Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies; 2018.

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- F. FM DS 1-28 - Wind Design; 2015, with Editorial Revision (2022).
- G. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2023.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.5 FIELD CONDITIONS

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.1 APPLICATIONS

- A. Insulation in Metal Framed Walls: Batt insulation with no vapor retarder.
- B. Insulation Over Roof Deck: Polyisocyanurate board.
- C. Insulation at tilt wall panels and cast in place concrete: Mineral fiber board.
- D. Fiberglass batt insulation, faced and unfaced. Locations as indicated on drawings.

2.2 FOAM BOARD INSULATION MATERIALS

- A. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, complying with ASTM C1289.
 - 1. Classifications:
 - a. Type II: Faced with either organic felt facers or glass fiber mat facers on both major surfaces of the core foam.

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- 1) Class 1 - Faced with glass fiber reinforced cellulosic felt facers on both major surfaces of core foam.
 - 2) Compressive Strength: Classes 1-2-3, Grade 1 - 16 psi (110 kPa), minimum.
 - 3) Thermal Resistance, R-value: At 1-1/2 inch thick; Class 1, Grades 1-2-3 - 8.4 (1.48), minimum, at 75 degrees F.
2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
 3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
 4. Water Vapor Permeance: 1.2 perm, maximum, at 1 inch thickness, and when tested in accordance with ASTM E96/E96M, desiccant method.
 5. Board Size: 48 inch by 96 inch.
 6. Board Thickness: 1.5 inch.
 7. Tapered Board: Slope as indicated; minimum thickness 1/2 inch; fabricate of fewest layers possible.
 8. Board Edges: Shiplap.
 9. Products:
 - a. Carlisle Coatings & Waterproofing, Inc; R2+ Matte: www.carlisleccw.com/#sle.
 - b. GAF; EnergyGuard Polyiso Insulation: www.gaf.com/#sle.
 - c. Rmax Inc; ECOMAXci FR: www.rmax.com/#sle.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.

2.3 FIBERBOARD INSULATION MATERIALS

- A. Mineral Fiberboard Insulation: Rigid or semi-rigid mineral fiber, ASTM C612 or ASTM C553; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E84.
 1. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
 2. Board Thickness: As indicated on drawings.
 3. Thermal Resistance: R-value of 4.0 per inch, minimum, at 75 degrees F, minimum, when tested according to ASTM C518.
 4. Maximum Density: 8 pcf, nominal.
 5. Products:
 - a. Johns Manville; CladStone 80 Water & Fire Block Insulation : www.jm.com/#sle.
 - b. ROCKWOOL (ROXUL, Inc); ROCKBOARD 80: www.rockwool.com/#sle.

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6. Substitutions: See Section 01 60 00 - Product Requirements.

2.4 BATT INSULATION MATERIALS

- A. Where batt insulation is indicated, either glass fiber or mineral fiber batt insulation may be used, at Contractor's option.
- B. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.
 - 1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
 - 2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
 - 3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
 - 4. Formaldehyde Content: Zero.
 - 5. Facing: Aluminum foil, flame spread 25 rated; one side.
 - a. Locations: As indicated on drawings.
 - 6. Facing: Unfaced, one side.
 - a. Locations: As indicated on drawings.
 - 7. Manufacturers:
 - a. CertainTeed Corporation: www.certainteed.com/#sle.
 - b. Johns Manville: www.jm.com/#sle.
 - c. Owens Corning Corporation: www.ocbuildingspec.com.
 - 8. Substitutions: See Section 01 60 00 - Product Requirements.

2.5 ACCESSORIES

- A. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch wide.
- B. Tape joints of rigid insulation in accordance with roofing and insulation manufacturers' instructions.
- C. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
 - 1. Length as required for thickness of insulation material and penetration of deck substrate.
- D. Adhesive: Type recommended by insulation manufacturer for application.

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PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of irregularities or materials or substances that may impede adhesive bond.

3.2 BOARD INSTALLATION AT EXTERIOR WALLS

- A. Install boards horizontally on walls.
 - 1. Place boards to maximize adhesive contact.
 - 2. Install in running bond pattern.
 - 3. Butt edges and ends tightly to adjacent boards and to protrusions.
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- C. Tape insulation board joints.

3.3 BOARD INSTALLATION OVER LOW SLOPE ROOF DECK

- A. Installation of board insulation over low slope roof deck is specified in Section 07 54 00 - Thermoplastic Membrane Roofing.
- B. Board Installation Over Roof Deck, General:
 - 1. See applicable roofing specification section for specific board installation requirements.
 - 2. Ensure vapor retarder is clean and dry, continuous, and ready for application of roofing system.
 - 3. Fasten insulation to deck in accordance with roofing manufacturer's written instructions and applicable Factory Mutual requirements.
 - 4. Do not apply more insulation than can be covered with roofing in same day.

3.4 BATT INSTALLATION

- A. Install insulation in accordance with manufacturer's instructions.
- B. Install in exterior wall spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

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- D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.
- E. Retain insulation batts in place with spindle fasteners at 12 inches on center.
- F. Coordinate work of this section with construction of air barrier seal specified in Section 07 25 00.

3.5 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.

3.6 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION 07 21 00

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SECTION 07 21 19 - FOAMED-IN-PLACE INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Foamed-in-place insulation.
 - 1. This material is to be used to fill miscellaneous voids, cracks and joints between dissimilar materials, whether shown on the drawings or not, in order to maintain the continuity of the thermal envelope, as follows:
 - a. In exterior framed walls.
 - b. In exterior wall crevices.
 - c. At junctions of dissimilar wall and roof materials.
 - 2. Refer to drawings for primary insulation materials contained in the thermal envelope.
- B. Protective intumescent coating.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.3 REFERENCE STANDARDS

- A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.
- B. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics; 2019.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.
- D. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022a.
- E. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).

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- F. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials; 2021a.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week prior to commencing work of this section.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product description, insulation properties, overcoat properties, and preparation requirements.
- C. Certificates: Certify that products of this section meet or exceed specified requirements.
- D. Manufacturer's Installation Instructions: Indicate special procedures, and perimeter conditions requiring special attention.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than three years of documented experience.
- B. Applicator Qualifications: Company specializing in performing work of the type specified, with minimum three years documented experience.

1.7 FIELD CONDITIONS

- A. Do not install insulation when ambient temperature is lower than 70 degrees F.
- B. Do not apply foam when temperature is below that specified by the manufacturer for ambient air and substrate.
- C. Do not apply foam when temperature is within 5 F of dew point.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Foamed-In-Place Insulation:
 1. BASF Corporation; ENERTITE Open Cell: www.spf.basf.com/#sle.
 2. Bayer MaterialScience; Bayseal OC: www.spf.bayermaterialscience.com.

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3. Icynene Inc; Classic Ultra Select: www.icynene.com/#sle.
4. Johns Manville; JM ocSPF Open Cell Spray Polyurethane Foam: www.jm.com/#sle.
5. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 MATERIALS

- A. Foamed-In-Place Insulation: Low-density, flexible, open celled, water vapor permeable polyurethane foam; foamed on-site, using blowing agent of water or non-ozone-depleting gas.
 1. Regulatory Requirements: Conform to applicable code for flame and smoke limitations.
 2. Aged Thermal Resistance: R-value of 3 (deg F hr sq ft)/Btu, minimum, when tested at 1 inch thickness in accordance with ASTM C518 after aging for 180 days at 41 degrees F.
 3. Air Permeance: 0.004 cfm/sq ft, maximum, when tested at intended thickness in accordance with ASTM E2178 or ASTM E283 at 1.5 psf.
 4. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, maximum, when tested in accordance with ASTM E84.
 5. Products:
 - a. BASF Corporation; ENERTITE NM: www.spf.basf.com/#sle.
 - b. Bayer MaterialScience; Bayseal OC: www.spf.bayermaterialscience.com.
 - c. Demilec LLC; DEMILEC APX: www.demilec.com/#sle.
 - d. Henry Company; PERMAX 0.5: www.henry.com.
 - e. Icynene Inc; Icynene Classic LD-C-50: www.icynene.com/#sle.
 - f. Johns Manville; JM ocSPF Open Cell Spray Polyurethane Foam: www.jm.com/#sle.
 - g. Rhino Linings Corporation; BioBased 501: www.biobased.rhinolinings.com/#sle.
 - h. Substitutions: See Section 01 60 00 - Product Requirements.

2.3 ACCESSORIES

- A. Primer: As required by insulation manufacturer.
- B. Overcoat: Intumescent coating of type recommended by insulation manufacturer and as required to comply with applicable codes.

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PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify work within construction spaces or crevices is complete prior to insulation application.
- B. Verify that surfaces are clean, dry, and free of matter that may inhibit insulation or overcoat adhesion.

3.2 PREPARATION

- A. Mask and protect adjacent surfaces from over spray or dusting.
- B. Apply primer in accordance with manufacturer's instructions.

3.3 APPLICATION

- A. Apply insulation in accordance with manufacturer's instructions.
- B. Apply insulation by spray method, to a uniform monolithic density without voids.
- C. Apply to achieve a thermal resistance R-value of 5.4 per inch.
- D. Apply overcoat monolithically, without voids to fully cover foam insulation.
- E. Patch damaged areas.
- F. Where applied to voids and gaps assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.
- G. Trim excess away for applied trim or remove as required for continuous sealant bead.

3.4 FIELD QUALITY CONTROL

- A. Field inspections and tests will be performed by an independent testing agency under provisions of Section 01 40 00.
- B. Inspection will include verification of insulation and overcoat thickness and density.

3.5 PROTECTION

- A. Do not permit subsequent construction work to disturb applied insulation.

END OF SECTION 07 21 19

Foamed-In-Place Insulation 07 21 19	4 of 4
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SECTION 07 26 00 - VAPOR RETARDERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Vapor retarders.

1.2 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Vapor retarders on exterior wall sheathing.
- B. Section 07 21 00 - Thermal Insulation: Vapor retarder installed in conjunction with batt insulation.
- C. Section 07 62 00 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with vapor retarders.

1.3 DEFINITIONS

- A. Vapor Retarder: Airtight barrier made of material that is relatively water vapor impermeable, to degree specified, with seams and joints sealed to adjacent surfaces.
- B. Vapor Retarder Class: A measure of a material or assembly's ability to limit the amount of moisture that passes through that material or assembly. Vapor retarder class is defined using Procedure A, Desiccant Method at 73 degrees F and 50 percent Relative Humidity (RH), in accordance with ASTM E96/E96M and ICC (IBC)-2018, as follows:
 - 1. Not used.
 - 2. Not used.
 - 3. Class III: Greater than 1.0 perm to 10 perms.

1.4 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).
- C. ASTM D751 - Standard Test Methods for Coated Fabrics; 2019.

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- D. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds; 1998 (Reapproved 2017).
- E. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2021.
- F. ASTM D5590 - Standard Test Method for Determining the Resistance of Paint Films and Related Coatings to Fungal Defacement by Accelerated Four-Week Agar Plate Assay; 2017 (Reapproved 2021).
- G. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022a.
- H. ICC (IBC)-2018 - International Building Code; 2018.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on material characteristics, performance criteria, and limitations.
- C. Shop Drawings: Provide drawings of special joint conditions.
- D. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.

1.7 MOCK-UPS

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Locate where directed.
- C. Mock-up may remain as part of work.

1.8 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

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PART 2 PRODUCTS

2.1 VAPOR RETARDERS

- A. Vapor Retarder Coating: Liquid applied, resilient, ultra-violet (UV) light resistant coating; associated joint treatment.
1. Water Vapor Permeance: 10 perm, maximum, when tested in accordance with ASTM E96/E96M.
 2. VOC Content: Less than 6.68 oz/gal, when tested in accordance with 40 CFR 59, Subpart D - EPA Method 24.
 3. Resistance to Fungal Growth: No growth when tested in accordance with ASTM D5590.
 4. Suitable for use on concrete, masonry, plywood, and gypsum sheathing.
 5. Joint Preparation Treatment: Provide coating manufacturer's recommended method, either tape or reinforcing mesh saturated with coating material.
 6. Joint Filler: As recommended by coating manufacturer and suitable to the substrate.
 7. Products:
 - a. Carlisle Coatings and Waterproofing; Barriseal-R: www.carlisleccw.com/#sle.
 - b. Henry Company; Air-Bloc 16MR: www.henry.com/#sle.
 - c. LATICRETE International, Inc; LATICRETE MVIS Air & Water Barrier with LATICRETE Waterproofing/Anti-Fracture Fabric: www.laticrete.com/#sle.
 - d. W.R. Meadows, Inc; Air-Shield LM or Air-Shield LM (All Season): www.wrmeadows.com/#sle.
 - e. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 ACCESSORIES

- A. Sealants, Tapes, and Accessories for Sealing Vapor Retarder and Adjacent Substrates: As indicated, complying with vapor retarder manufacturer's installation instructions.
- B. Sealant for Cracks and Joints in Substrates: Resilient elastomeric joint sealant compatible with substrates and vapor retarder materials.
1. Application: Apply at 30 to 40 mil, 0.030 to 0.040 inch, nominal thickness.
 2. Color: Green.
 3. Elongation: 1,300 percent, measured in accordance with ASTM D412.
 4. Peel Adhesion: 28 lb/inch, minimum, when tested in accordance with ASTM D903.

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5. Hydrostatic Head Pressure: Resists head pressure of 57 feet, maximum, when tested in accordance with ASTM D751.
6. Products:
 - a. Rubber Polymer Company; Rub-R-Wall Mastic: www.rpcinfo.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M; slip resistance requirement waived if not installed on roof.
 1. Width: 4 inches.
 2. Ultraviolet (UV) and Weathering Resistance: Approved by manufacturer for up to 30 days of weather exposure.
- D. Stainless Steel Flashing: Flexible flashing with 2 mil, 0.002 inch thick Type 304 stainless steel sheet, 8 mil, 0.008 inch of butyl adhesive and siliconized release liner.
 1. Roll Length: 50 feet long.
 2. Width: 6 inches wide.
- E. Vapor Retarder Tape: Coated polyester film with acrylic adhesive backing; pressure sensitive.
 1. Products:
 - a. Henry Company; Henry Sheathing Tape: www.henry.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- F. Sheet Membrane Mounting Tape: Double-sided strip of pressure-sensitive tape, acrylic adhesive reinforced with embedded fiber-strand carrier layer and plastic backing.
 1. Width: 3/4 inch.
 2. Roll Length: 164 feet.
 3. Thickness: 14 mil, 0.014 inch.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and conditions comply with requirements of this section.

3.2 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.

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3.3 INSTALLATION

- A. Install materials in accordance with manufacturer's installation instructions.
- B. Vapor Retarders: Install continuous airtight barrier over surfaces indicated, with sealed seams and sealed joints to adjacent surfaces.
- C. Apply sealants and adhesives within recommended temperature range in accordance with manufacturer's installation instructions.
- D. Vapor Retarder Coatings:
 - 1. Prepare substrate in accordance with coating manufacturer's installation instructions; treat joints in substrate and between dissimilar materials as indicated.
 - 2. Apply flashing to seal with adjacent construction and to bridge joints in coating substrate.
- E. Openings and Penetrations in Exterior Vapor Retarders:
 - 1. Install flashing over sills, covering entire sill framing member, and extend at least 5 inches onto vapor retarder and at least 6 inches up jambs; mechanically fasten stretched edges.
 - 2. At openings with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches wide; do not seal sill flange.
 - 3. At openings with nonflanged frames, seal vapor retarder to each side of framing at opening using flashing at least 9 inches wide, and covering entire depth of framing.
 - 4. At head of openings, install flashing under vapor retarder extending at least 2 inches beyond face of jambs; seal vapor retarder to flashing.
 - 5. At interior face of openings, seal gaps between window/door frame and rough framing using appropriate joint sealant over backer rod.
 - 6. Service and Other Penetrations: Form flashing around penetrating items and seal to surface of vapor retarder.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Owner's Inspection and Testing: Cooperate with Owner's testing agency.
 - 1. Allow access to work areas and staging.
 - 2. Notify Owner's testing agency in writing of schedule for work of this section to allow sufficient time for testing and inspection.

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3. Do not cover work of this section until testing and inspection is accepted.

C. Do not cover installed vapor retarders until required inspections have been completed.

D. Obtain approval of installation procedures from vapor retarder manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.

3.5 PROTECTION

A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION 07 26 00

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SECTION 07 41 13 - METAL ROOF PANELS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Architectural roofing system of preformed steel panels.

1.2 RELATED REQUIREMENTS

- A. Section 05 12 00 - Structural Steel Framing: Roof framing and purlins.
- B. Section 06 10 00 - Rough Carpentry: Roof sheathing.
- C. Section 07 21 00 - Thermal Insulation: Rigid roof insulation.
- D. Section 07 42 13 - Metal Wall Panels: Preformed wall panels.
- E. Section 07 92 00 - Joint Sealants: Sealing joints between metal roof panel system and adjacent construction.

1.3 REFERENCE STANDARDS

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- B. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2022.
- D. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
- E. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2021.

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- F. ASTM D4869/D4869M - Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing; 2016a (Reapproved 2021).
- G. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022a.
- H. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; 2020a.
- I. ASTM E1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference; 2005 (Reapproved 2017).
- J. ASTM E1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference; 1995 (Reapproved 2018).
- K. ASTM E1680 - Standard Test Method for Rate of Air Leakage through Exterior Metal Roof Panel Systems; 2016 (Reapproved 2022).
- L. IAS AC472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems; 2018.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Summary of test results, indicating compliance with specified requirements.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Specimen warranty.
- C. Shop Drawings: Include layouts of roof panels, details of edge and penetration conditions, spacing and type of connections, flashings, underlayments, and special conditions.
 - 1. Show work to be field-fabricated or field-assembled.
 - 2. Include structural analysis signed and sealed by qualified structural engineer, indicating compliance of roofing system to specified loading conditions.
- D. Verification Samples: For each roofing system specified, submit samples of minimum size 12 inches square, representing actual roofing metal, thickness, profile, color, and texture.
 - 1. Include typical panel joint in sample.
 - 2. Include typical fastening detail.

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- E. Manufacturer Qualification Statement: Provide documentation showing metal roof panel fabricator is accredited under IAS AC472.
- F. Installer's qualification statement.
- G. Test Reports: Indicate compliance of metal roofing system to specified requirements.
- H. Warranty: Submit specified manufacturer's warranty and ensure that forms have been completed in Owner's name and are registered with manufacturer.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
 - 1. Accredited by IAS in accordance with IAS AC472.
 - 2. Products shall carry Miami-Dade County Notice of Acceptance (NOA).
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Provide strippable plastic protection on prefinished roofing panels for removal after installation.
- B. Store roofing panels on project site as recommended by manufacturer to minimize damage to panels prior to installation.

1.7 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Finish Warranty: Provide manufacturer's special warranty covering failure of factory-applied exterior finish on metal roof panels and agreeing to repair or replace panels that show evidence of finish degradation, including significant fading, chalking, cracking, or peeling within specified warranty period of five years from Date of Substantial Completion.
- C. Waterproofing Warranty: Provide manufacturer's warranty for weathertightness of roofing system, including agreement to repair or replace roofing that fails to keep out water within specified warranty period of five years from Date of Substantial Completion.

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PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Metal Roof Panels:

1. Basis of Design:
 - a. Morin Corporation; MorZip Roof System MZ-18-2 : www.morincorp.com/#sle.
2. Other acceptable manufacturers:
 - a. ATAS International, Inc: www.atas.com/#sle.
 - b. Berridge Manufacturing Company: www.berridge.com/#sle.
 - c. Fabral: www.fabral.com/#sle.
3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Metal Soffit Panels:

1. Same as metal roof panel manufacturer.
2. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 PERFORMANCE REQUIREMENTS

- #### A. Metal Roof Panels: Provide complete roofing assemblies, including roof panels, clips, fasteners, connectors, and miscellaneous accessories, tested for compliance with the following minimum standards:
1. Structural Design Criteria: Provide panel assemblies designed to safely support design loads at support spacing indicated, with deflection not to exceed L/180 of span length(L) when tested in accordance with ASTM E1592.
 2. Overall: Complete weathertight system tested and approved in accordance with ASTM E1592.
 3. Thermal Movement: Design system to accommodate without deformation anticipated thermal movement over ambient temperature range of 100 degrees F.

2.3 ARCHITECTURAL METAL ROOF PANELS

- #### A. Architectural Metal Roofing: Provide complete engineered system complying with specified requirements and capable of remaining weathertight while withstanding anticipated movement of substrate and thermally induced movement of roofing system.
- #### B. Metal Panels: Factory-formed panels with factory-applied finish.
1. Steel Panels:
 - a. Zinc-coated steel complying with ASTM A653/A653M; minimum G60 galvanizing.

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- b. Steel Thickness: Minimum 24 gage (0.024 inch).
 - 2. Profile: Standing seam, with minimum 1.5 inch seam height; concealed fastener system for field seaming with special tool.
 - 3. Texture: Smooth.
 - 4. Length: Full length of roof slope, without lapped horizontal joints.
 - 5. Width: Maximum panel coverage of 24 inches.
- C. Metal Soffit Panels:
 - 1. Profile: Style as indicated, with venting not provided.
 - 2. Material: Precoated steel sheet, 22 gage, 0.0299 inch minimum thickness.
 - 3. Color: As selected by Architect from manufacturer's standard line.

2.4 ATTACHMENT SYSTEM

- A. Concealed System: Provide manufacturer's standard stainless steel or nylon-coated aluminum concealed anchor clips designed for specific roofing system and engineered to meet performance requirements, including anticipated thermal movement.

2.5 SECONDARY FRAMING

- A. Miscellaneous Secondary Framing: Light gage steel framing incidental to structural supports; fabricated from steel sheet.
- B. Framing Material: ASTM A 1011/A 1011M Designation SS steel sheet.
 - 1. Profile: Manufacturer's standard cee, zee, asymmetrical zee, hat channel, plain channel, single slope eave strut, double slope eave strut, and angle.
 - 2. Thickness: 12 gage, 0.1046 inch.
 - 3. Finish: Galvanized per ASTM A653/A653M G90.
- C. Framing Connectors: Factory-made formed steel sheet, ASTM A653/A653M SS Grade 50, with G60/Z180 hot dipped galvanized coating and factory punched holes.

2.6 FABRICATION

- A. Panels: Provide factory or field fabricated panels with applied finish and accessory items, using manufacturer's standard processes as required to achieve specified appearance and performance requirements.
- B. Joints: Provide captive gaskets, sealants, or separator strips at panel joints to ensure weathertight seals, eliminate metal-to-metal contact, and minimize noise from panel movements.

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2.7 FINISHES

- A. Fluoropolymer Coil Coating System: Manufacturer's standard multi-coat aluminum coil coating system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of coil coated aluminum surfaces having minimum total dry film thickness (DFT) of 0.9 mil, 0.0009 inch; color and gloss to match sample.

2.8 ACCESSORIES

- A. Miscellaneous Sheet Metal Items: Provide flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, caps, and equipment curbs of the same material, thickness, and finish as used for the roofing panels. Items completely concealed after installation may optionally be made of stainless steel.
- B. Rib and Ridge Closures: Provide prefabricated, close-fitting components of steel with corrosion resistant finish or combination steel and closed-cell foam.
- C. Sealants:
 - 1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
 - 2. Concealed Sealant: Non-curing butyl sealant or tape sealant.
 - 3. Seam Sealant: Factory-applied, non-skinning, non-drying type.
- D. Underlayment: Synthetic non-asphaltic sheet, intended by manufacturer for mechanically fastened roofing underlayment without sealed seams.
 - 1. Type: Woven polypropylene with anti-slip polyolefin coating on both sides.
 - 2. Self Sealability: Passing nail sealability test specified in ASTM D1970/D1970M.
 - 3. Flammability: Minimum of Class A, when tested in accordance with ASTM E108.
 - 4. Low Temperature Flexibility: Passing test specified in ASTM D1970/D1970M.
 - 5. Water Vapor Permeance: Vapor retarder; maximum of 1 perm, when tested in accordance with ASTM E96/E96M Procedure A (desiccant method).
 - 6. Liquid Water Transmission: Passes ASTM D4869/D4869M.
 - 7. Functional Temperature Range: Minus 70 degrees F to 212 degrees F.
 - 8. Fasteners: As specified by manufacturer and building code qualification report or approval.

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PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation of preformed metal roof panels until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Coordinate roofing work with provisions for roof drainage, flashing, trim, penetrations, and other adjoining work to assure that the completed roof will be free of leaks.
- B. Remove protective film from surface of roof panels immediately prior to installation. Strip film carefully, to avoid damage to prefinished surfaces.
- C. Separate dissimilar metals by applying a bituminous coating, self-adhering rubberized asphalt sheet, or other permanent method approved by roof panel manufacturer.
- D. Where metal will be in contact with wood or other absorbent material subject to wetting, seal joints with sealing compound and apply one coat of heavy-bodied bituminous paint.

3.3 INSTALLATION

- A. Overall: Install roofing system in accordance with approved shop drawings and panel manufacturer's instructions and recommendations, as applicable to specific project conditions. Anchor all components of roofing system securely in place while allowing for thermal and structural movement.
 - 1. Install roofing system with concealed clips and fasteners, except as otherwise recommended by manufacturer for specific circumstances.
 - 2. Minimize field cutting of panels. Where field cutting is absolutely required, use methods that will not distort panel profiles. Use of torches for field cutting is absolutely prohibited.
- B. Accessories: Install all components required for a complete roofing assembly, including flashings, gutters, downspouts, trim, moldings, closure strips, caps, rib closures, ridge closures, and similar roof accessory items.
- C. Roof Panels: Install panels in strict accordance with manufacturer's instructions, minimizing transverse joints except at junction with penetrations.

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1. Form weathertight standing seams incorporating concealed clips, using an automatic mechanical seaming device approved by the panel manufacturer.
2. Incorporate concealed clips at panel joints, and apply snap-on battens to provide weathertight joints.

3.4 CLEANING

- A. Clean exposed sheet metal work at completion of installation. Remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving the work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to the finish.

3.5 PROTECTION

- A. Do not permit storage of materials or roof traffic on installed roof panels. Provide temporary walkways or planks as necessary to avoid damage to completed work. Protect roofing until completion of project.
- B. Touch-up, repair, or replace damaged roof panels or accessories before Date of Substantial Completion.

END OF SECTION 07 41 13

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SECTION 07 42 13 - METAL WALL PANELS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Manufactured metal panels for exterior wall panels and subgirt framing assembly, with insulation, related flashings, and accessory components.

1.2 RELATED REQUIREMENTS

- A. Section 05 40 00 - Cold-Formed Metal Framing: Wall panel substrate.
- B. Section 07 21 00 - Thermal Insulation.
- C. Section 07 26 00 – Vapor Retarders: Vapor retarders at exterior walls.
- D. Not used.
- E. Section 07 92 00 - Joint Sealants: Sealing joints between metal wall panel system and adjacent construction.
- F. Section 09 21 16 - Gypsum Board Assemblies: Wall panel substrate.

1.3 REFERENCE STANDARDS

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- B. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2022.
- E. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2022.

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- F. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data - Wall System: Manufacturer's data sheets on each product to be used, including:
 - 1. Physical characteristics of components shown on shop drawings.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation instructions and recommendations.
- C. Shop Drawings: Indicate dimensions, layout, joints, construction details, support clips, and methods of anchorage.
- D. Samples: Submit two samples of wall panel and soffit panel, 12 inches by 12 inches in size illustrating finish color, sheen, and texture.
- E. Manufacturer's Qualification Statement.
- F. Installer's Qualification Statement.
- G. Warranty Documentation for Installation of Building Rainscreen Assembly: Submit installer warranty and ensure that forms have been completed in Owner's name and registered with installer.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in installing products of the type specified in this section with minimum three years of documented experience.

1.6 MOCK-UP

- A. See Section 01 45 00 for additional requirements.
- B. Locate where directed by Architect.

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1.7 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 66 10 for packaging waste requirements.
- B. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- C. Store prefinished material off the ground and protected from weather; prevent twisting, bending, or abrasion; provide ventilation; slope metal sheets to ensure proper drainage.
- D. Prevent contact with materials that may cause discoloration or staining of products.

1.8 FIELD CONDITIONS

- A. Do not install wall panels when air temperature or relative humidity are outside manufacturer's limits.

1.9 WARRANTY

- A. See Section 01 78 36, for additional warranty requirements.
- B. Installation Warranty for Building Rainscreen Assembly: Installer of exterior rainscreen assembly (including air/vapor barrier and attachments, framing, and exterior panels) to provide 10-year warranty that includes coverage for defective materials and/or workmanship. This warranty will also clearly include materials, labor, necessary activity to access these areas, and removal of any materials to effect repairs and restore to watertight conditions. www.edacontractors.com/#sle

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design:
 - 1. Metal Wall Panels - Concealed Fasteners: Pulse Series Wall Panels manufactured by Morin; a Kingspan Group Company; 685 Middle Street, Bristol, Connecticut 06010; 1-800-640-9501 (Toll Free); (www.morincorp.com)..
- B. Other acceptable manufacturers:
 - 1. ATAS International, Inc: www.atas.com/#sle.
 - 2. Berridge Manufacturing Company: www.berridge.com/#sle.
 - 3. Fabral: www.fabral.com/#sle.

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- C. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 MANUFACTURED METAL PANELS

- A. Wall Panel System: Factory fabricated prefinished metal panel system, site assembled.
1. Provide exterior wall panels and subgirt framing assembly.
 2. Design and size components to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of wall.
 3. Design Pressure: In accordance with applicable codes.
 4. Maximum Allowable Deflection of Panel: $L/180$ for length(L) of span.
 5. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; and deflection of structural support framing.
 6. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
 7. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.
 8. Provide continuity of air barrier and vapor retarder seal at building enclosure elements in accordance with materials specified in Section 07 25 00.
- B. Exterior Wall Panels:
1. Profile: Horizontal; style as indicated.
 2. Material: Precoated steel sheet, 22 gage, 0.0299 inch minimum thickness.
 3. Panel Width: As indicated on drawings..
 4. Color: As indicated on drawings.
- C. Subgirt Framing Assembly:
1. Profile as indicated; to attach panel system to building.

2.3 MATERIALS

- A. Precoated Steel Sheet: Aluminum-zinc alloy-coated steel sheet, ASTM A792/A792M, Commercial Steel (CS)) or Forming Steel (FS), with AZ50/AZM150 coating; continuous-coil-coated on exposed surfaces with specified finish coating and on panel back with specified panel back coating.
- B. Select materials with surface flatness, smoothness, and lack of surface blemishes where exposed to view in finished system.

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2.4 FINISHES

- A. Exposed Surface Finish: Panel manufacturer's standard polyvinylidene fluoride (PVDF) coating, top coat over epoxy primer.

2.5 ACCESSORIES

- A. Cladding Support Clips: Thermally-broken, galvanized steel clips for support of cladding z-girts, angles, channels and other framing.
 - 1. Thermal Spacer Clip: Pultruded glass fiber and thermoset polyester resin clip; 3/16 inch thick at top, base, and web.
 - 2. Clip Depth: As indicated on drawings.
- B. Gaskets: Manufacturer's standard type suitable for use with system, permanently resilient; ultraviolet and ozone resistant.
- C. Concealed Sealants: Non-curing butyl sealant or tape sealant.
- D. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
- E. Fasteners: Manufacturer's standard type to suit application; with soft neoprene washers, steel, hot dip galvanized. Fastener cap same color as exterior panel.
- F. Field Touch-up Paint: As recommended by panel manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that building framing members are ready to receive panels.
- B. Verify that water-resistive barrier has been installed over substrate completely and correctly;.

3.2 PREPARATION

- A. Install subgirts perpendicular to panel length, securely fastened to substrates and shimmed and leveled to uniform plane. Space at intervals indicated.
- B. Protect surrounding areas and adjacent surfaces from damage during execution of this work.

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3.3 INSTALLATION

- A. Install panels on walls and soffits in accordance with manufacturer's instructions.
- B. Fasten panels to structural supports; aligned, level, and plumb.
- C. Locate joints over supports.
- D. Provide expansion joints where indicated.
- E. Use concealed fasteners unless otherwise approved by Architect.

3.4 CLEANING

- A. Remove site cuttings from finish surfaces.
- B. Remove protective material from wall panel surfaces.
- C. Upon completion of installation, thoroughly clean prefinished aluminum surfaces in accordance with AAMA 609 & 610.

3.5 PROTECTION

- A. Protect metal wall panels until completion of project.
- B. Touch-up, repair, or replace damaged wall panels or accessories before Date of Substantial Completion.

END OF SECTION 07 42 13

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SECTION 07 42 43 - COMPOSITE WALL PANELS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Composite wall panel system and accessories with drainable and back-ventilated rainscreen assembly.

1.2 RELATED REQUIREMENTS

- A. Section 07 26 00 – Vapor Retarders: Vapor retarders at exterior walls.
- B. Section 07 62 00 - Sheet Metal Flashing and Trim.
- C. Section 09 91 13 - EXTERIOR PAINTING: Field painting.

1.3 REFERENCE STANDARDS

- A. AAMA 509 - Voluntary Test and Classification Method for Drained and Back Ventilated Rainscreen Wall Cladding Systems; 2022.
- B. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- C. ASHRAE Std 90.1 I-P - Energy Standard for Buildings Except Low-Rise Residential Buildings; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- F. ASTM C1186 - Standard Specification for Flat Fiber-Cement Sheets; 2022.
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.
- H. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2022.

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- I. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2023.

1.4 SUBMITTALS

- A. See Section 01 30 00 Shop Drawing Submittals for submittal procedures.
- B. Product Data: Provide manufacturer's data sheets on each product to be used including, but not limited to, materials, dimensions, accessories, and fasteners.
- C. Shop Drawings: Indicate layout, panel locations, and configuration.
 - 1. Indicate size, spacing, and location of support and attachment components, connections, types and locations of fasteners.
 - 2. Indicate necessary provisions for structural and thermal movement between wall panel system and adjacent materials.
 - 3. Indicate locations and sizes of penetrations through wall panel system for Architect's approval.
- D. Samples: Submit two samples of each style and color panel, 12 by 12 inches in size and showing finish color, sheen, and texture.
- E. Manufacturer's Instructions: Include instructions for storage, handling, preparation, and installation of product.
- F. Manufacturer's Field Reports: Submit weekly site inspection reports of site inspection conducted by manufacturer's qualified installer including photographs to verify acceptable quality of this work.
- G. Evaluation Service Reports: Show compliance with specified requirements.
- H. Manufacturer's qualification statement.
- I. Installer's qualification statement.
- J. Maintenance Data: Periodic inspection recommendations and maintenance procedures.
- K. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

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- L. Warranty Documentation for Installation of Building Rainscreen Assembly: Submit installer warranty and ensure that forms have been completed in Owner's name and registered with installer.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified in this section with minimum three years of documented experience and approved by manufacturer.

1.6 MOCK-UPS

- A. See Section 01 45 00 Quality Control for additional requirements.
- B. Locate where directed.
- C. Mock-up may remain as part of work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 74 19 - Construction Waste Management and Disposal for packaging waste requirements.
- B. Deliver and store materials with labels intact in manufacturer's unopened packaging until ready for installation.
- C. Store products under waterproof cover, well ventilated, and elevated above grade on a flat surface.
- D. Protect materials from harmful environmental elements, construction dust, direct sunlight, and other potentially detrimental conditions.

1.8 FIELD CONDITIONS

- A. Do not install panels when air temperature or relative humidity are outside manufacturer's limits.

1.9 WARRANTY

- A. See Section 01 77 10 Contract Close Out for additional warranty requirements.
- B. Manufacturer Warranty: Provide manufacturer warranty for each panel style.
- C. Finish Warranty: Provide 5-year manufacturer's warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive

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fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

- D. Installation Warranty for Building Rainscreen Assembly: Provide 10-year warranty including, but not limited to, defective materials and workmanship, labor, removal of materials to effect repairs and restore to watertight conditions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Composite Wall Panels:
 1. Basis of Design: Fiberesin Industries, Inc. N48W37031 E. Wisconsin Avenue, Oconomowoc, WI: (262) 567- 4427 www.stonewoodpanels.com; email: info@fiberesin.com.
 2. Other acceptable manufacturers:
 - a. Cembrit, distributed by American Fiber Cement Corporation: www.americanfibercement.com/#sle.
 - b. Nichiha USA, Inc: www.nichiha.com/#sle.
 3. Substitutions: See Section 01 25 00 Substitutions and Products.

2.2 COMPOSITE WALL PANELS

- A. Panels: Fiber-cement sheets in compliance with ASTM C1186, Type A.
 1. Design Wind Loads: Comply with requirements of authorities having jurisdiction.

2.3 ACCESSORIES

- A. Aluminum Cladding Support System: Thermally isolated from substrate with vertical face fastening. Comply with ASHRAE Std 90.1 I-P and NFPA 285.
 1. Substrate: As indicated on drawings.
 2. Thermal Spacer: Prefastened flame retardant polypropylene copolymer isolator at base of brackets, with 3/16 inch nominal thickness.
 3. Brackets: Extruded aluminum, with thermal spacer at base and slot at top to allow field adjustment and alignment of rails.
 - a. Range of Height Adjustment: As indicated on drawings.
 4. Vertical Rail: Cladding support, extruded aluminum with 0.094-inch minimum thickness, and 118-1/8 inches long; attached to bracket.
 5. Horizontal Rail: Cladding support, extruded aluminum with 0.094-inch minimum thickness and unique profile, 118-1/8 inches long; attached to vertical rail.

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- 6. Fasteners: Provide support system and cladding attachment fasteners as recommended by system manufacturer in accordance with requirements.
- B. Concealed Clip System: Manufacturer's standard system consisting of starter tracks, panel clips, corner clips, sealant backers, and spacers.
- C. Trim: Same material and texture as panel.
- D. Metal Trim: Extruded aluminum alloy 6063-T5 temper.
 - 1. Dimension and Layout: As indicated on drawings.
 - 2. Finish: Clear anodized.
 - 3. Color: As selected by Architect.
- E. Sealant: ASTM C920, Class 35, elastomeric, polyurethane or silyl-terminated polyether/polyurethane, and capable of being painted.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrate, clean and repair as required to eliminate conditions that would be detrimental to proper installation.
- B. Verify that water-resistive barrier has been properly installed; see Section 07 25 00.
- C. Inspect products thoroughly prior to installation. Do not install any product which may have been damaged in shipment or appears to have a damaged or irregular finish.
- D. Do not begin until unacceptable conditions have been corrected.
- E. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 INSTALLATION

- A. Wall Panels:
 - 1. Install in accordance with manufacturer's instructions.
 - 2. Install wall panels with manufacturer's recommended concealed attachment system.
 - 3. Do not install wall panels less than 6 inches above surface of ground, nor closer than 1 inch to surfaces where water may collect.

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3.3 CLEANING

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.
- B. Clean exposed work upon completion of installation; remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to finish.

3.4 PROTECTION

- A. Protect installed products until Date of Substantial Completion.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION 07 42 43

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SECTION 07 54 00 - THERMOPLASTIC MEMBRANE ROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Adhered system with thermoplastic roofing membrane.
- B. Insulation, flat and tapered.
- C. Vapor retarder.
- D. Deck sheathing.
- E. Flashings.
- F. Roofing stack boots and walkway pads.

1.2 RELATED REQUIREMENTS

- A. Section 05 30 00 - Metal Decking
- B. Section 06 10 00 - Rough Carpentry: Wood nailers and curbs.
- C. Section 07 62 00 - Sheet Metal Flashing and Trim: Counterflashings, reglets.
- D. Section 07 71 00 - Roof Specialties: Prefabricated roofing expansion joint flashing.
- E. Section 07 72 00 - Roof Accessories: Roof-mounted units; prefabricated curbs.
- F. Section 08 63 00 - Metal-Framed Skylights: Skylight frame, integral curb, and counterflashing.
- G. Section 22 10 06 - Plumbing Piping Specialties: Roof drains.
- H. Section 26 41 10 - Lightning Protection System

1.3 REFERENCE STANDARDS

- A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019.

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- B. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.
- C. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.
- D. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2022a.
- E. ASTM D6878/D6878M - Standard Specification for Thermoplastic Polyolefin-Based Sheet Roofing; 2021.
- F. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces; 2011 (Reapproved 2019).
- G. FM P7825 - Approval Guide; Factory Mutual Research Corporation; current edition.
- H. FM DS 1-28 - Wind Design; 2015, with Editorial Revision (2022).
- I. NRCA ML104 - The NRCA Roofing and Waterproofing Manual; National Roofing Contractors Association; Fifth Edition, with interim updates.
- J. UL (DIR) - Online Certifications Directory; Current Edition.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.
 - 1. Review preparation and installation procedures and coordinating and scheduling required with related work.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, and fasteners.
- C. Sustainable Design Documentation: Test report showing solar reflectance index of membrane.
- D. Specimen Warranty: For approval.
- E. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, and paver layout.
- F. Samples for Verification: Submit two samples 12 by 12 inches in size illustrating insulation.

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- G. Samples of Pavers: Submit two.
- H. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.
- I. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- J. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.
- K. Warranty:
 - 1. Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
 - 2. Submit installer's certification that installation complies with all warranty conditions for the waterproof membrane.

1.6 QUALITY ASSURANCE

- A. Perform work in accordance with NRCA Roofing and Waterproofing Manual.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.
 - 1. Products shall carry Miami-Dade County Notice of Acceptance (NOA).
- C. Installer Qualifications: Company specializing in performing the work of this section:
 - 1. With minimum five years documented experience.
 - 2. Approved by membrane manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.
- B. Store products in weather protected environment, clear of ground and moisture.
- C. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.
- D. Protect foam insulation from direct exposure to sunlight.

1.8 FIELD CONDITIONS

- A. Do not apply roofing membrane during unsuitable weather.

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- B. Do not apply roofing membrane when ambient temperature is below 40 degrees F or above 95 degrees F.
- C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
- E. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

1.9 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Material Warranty: Provide membrane manufacturer's warranty agreeing to replace material that shows manufacturing defects within 5 years after installation.
- C. System Warranty: Provide manufacturer's system warranty agreeing to repair or replace roofing that leaks or is damaged due to wind or other natural causes.
 - 1. Warranty Term: 20 years.
 - 2. For repair and replacement include costs of both material and labor in warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Thermoplastic Polyolefin (TPO) Membrane Materials:
 - 1. Carlisle Roofing Systems, Inc; FleeceBACK Fully Adhered TPO: www.carlisle-syntec.com/#sle.
 - 2. Firestone Building Products, LLC; UltraPly Platinum: www.firestonebpco.com.
 - 3. GAF; EverGuard Fleece Back TPO 80 mil: www.gaf.com/#sle.
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Insulation:
 - 1. Carlisle SynTec: www.carlisle-syntec.com.
 - 2. GAF; : www.gaf.com.
 - 3. Hunter Panels, LLC: www.hpanels.com.
 - 4. ROXUL, Inc: www.roxul.com/sle.
 - 5. Versico, a division of Carlisle Construction Materials Inc: www.versico.com.
 - 6. Substitutions: See Section 01 60 00 - Product Requirements.

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2.2 ROOFING - UNBALLASTED APPLICATIONS

- A. Thermoplastic Membrane Roofing: One ply membrane, fully adhered , over vapor retarder and insulation.
- B. Roofing Assembly Requirements:
 - 1. Solar Reflectance Index (SRI): 78, minimum, calculated in accordance with ASTM E1980.
 - a. Field applied coating may not be used to achieve specified SRI.
 - 2. Roof Covering External Fire Resistance Classification: UL Class A.
 - 3. Factory Mutual Classification: Class I and windstorm resistance of I-110, in accordance with FM DS 1-28.
 - 4. Insulation Thermal Value (R), minimum: 22.8; provide insulation of thickness required.
- C. Acceptable Insulation Types - Constant Thickness Application:
 - 1. Minimum 2 layers of polyisocyanurate board.
- D. Acceptable Insulation Types - Tapered Application:
 - 1. Tapered polyisocyanurate board.

2.3 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

- A. Membrane:
 - 1. Material: Thermoplastic polyolefin (TPO) complying with ASTM D6878/D6878M.
 - 2. Reinforcing: Both internal fabric and backing.
 - 3. Thickness: 0.080 inch, minimum.
 - 4. Sheet Width: Factory fabricated into largest sheets possible.
 - 5. Solar Reflectance: 0.75, minimum, initial, and 0.65, minimum, 3-year, certified by Cool Roof Rating Council.
 - 6. Thermal Emissivity: 0.80, minimum, initial, and 0.79, minimum, 3-year, certified by Cool Roof Rating Council.
 - 7. Color: White.
- B. Seaming Materials: As recommended by membrane manufacturer.
- C. Vapor Retarder: Material approved by roof manufacturer complying with requirements of fire rating classification; compatible with roofing and insulation materials.
 - 1. Fire-retardant adhesive.
- D. Flexible Flashing Material: Same material as membrane.

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- E. Separation Sheet: Sheet polyethylene; 2 mil thick.

2.4 DECK SHEATHING AND COVER BOARDS

- A. Deck Sheathing and Cover Board: Glass mat faced gypsum panels, ASTM C1177/C1177M, fire resistant type, 5/8 inch thick.
 - 1. Products:
 - a. Georgia-Pacific DensDeck, DensDeck Prime, or DensDeck DuraGuard: www.densdeck.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

2.5 INSULATION

- A. Polyisocyanurate Board Insulation: Rigid cellular foam, complying with ASTM C1289, Type I, aluminum foil both faces; Class 2, glass fiber-reinforced foam core and with the following characteristics:
 - 1. Compressive Strength: 16 psi
 - 2. Board Size: 48 by 96 inch.
 - 3. Tapered Board: Slope as indicated; minimum thickness one inch; fabricate of fewest layers possible.
 - 4. Thermal Resistance: R-value of 5.7/inch.
 - 5. Board Edges: Square.
 - 6. Manufacturers:
 - a. GAF; EnergyGuard Ultra PolyIso Tapered Insulation: www.gaf.com.
 - b. Hunter Panels, LLC; H-Shield: www.hpanels.com.
 - c. Versico, a division of Carlisle Construction Materials, Inc; SecurShield Insulation: www.versico.com.
 - 7. Substitutions: See Section 01 60 00 - Product Requirements.

2.6 ACCESSORIES

- A. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.
- B. Sheathing Adhesive: Non-combustible type, for adhering gypsum sheathing to metal deck.
- C. Sheathing Joint Tape: Heat resistant type, four inch wide, self adhering.
- D. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide; self adhering.
- E. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.

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1. Length as required for thickness of insulation material and penetration of deck substrate, with metal washers.
- F. Membrane Adhesive: As recommended by membrane manufacturer.
 - G. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.
 - H. Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.
 - I. Insulation Adhesive: As recommended by insulation manufacturer.
 - J. Sealants: As recommended by membrane manufacturer.
 - K. Walkway Pads: Suitable for maintenance traffic, contrasting color or otherwise visually distinctive from roof membrane.
 1. Composition: Roofing membrane manufacturer's standard.
 2. Size: As indicated.
 3. Surface Color: White.
 4. Products:
 - a. Membrane manufacturer's standard walkway pad.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
 - L. Walkway Pads for Existing Roof: EPDM, 0.30 inch thick by 30 by 30 inches with EPDM tape adhesive strips laminated to the bottom.

PART 3 EXECUTION

3.1 INSTALLATION - GENERAL

- A. Perform work in accordance with NRCA Roofing and Waterproofing Manual and manufacturer's instructions.
- B. Do not apply roofing membrane during unsuitable weather.
- C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.
- D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

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- F. Coordinate the work with installation of associated counterflashings installed by other sections as the work of this section proceeds.

3.2 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.
- C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify deck surfaces are dry and free of snow or ice.
- E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips, nailing strips, and reglets are in place.

3.3 CONCRETE DECK PREPARATION

- A. Verify adjacent precast concrete roof members do not vary more than 1/4 inch in height. Verify grout keys are filled flush.
- B. Fill surface honeycomb and variations with latex filler.
- C. Confirm dry deck by moisture meter with 12 percent moisture maximum.

3.4 METAL DECK PREPARATION

- A. Install deck sheathing on metal deck:
 1. Lay with long side at right angle to flutes; stagger end joints; provide support at ends.
 2. Cut sheathing cleanly and accurately at roof breaks and protrusions to provide smooth surface.
 3. Tape joints.
 4. Mechanically fasten sheathing to roof deck, in accordance with Factory Mutual recommendations and roofing manufacturer's instructions.
 - a. Over entire roof area, fasten sheathing using 8 fasteners with washers per sheathing board.
 - b. At roof perimeter to a distance of 4 ft in from edges, fasten sheathing using 6 fasteners with washers per board.

3.5 VAPOR RETARDER AND INSULATION - UNDER MEMBRANE

- A. Apply vapor retarder to deck surface with adhesive in accordance with manufacturer's instructions.

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1. Extend vapor retarder under cant strips and blocking to deck edge.
 2. Install flexible flashing from vapor retarder to air seal material of wall construction, lap and seal to provide continuity of the air barrier plane.
- B. Ensure vapor retarder is clean and dry, continuous, and ready for application of insulation.
- C. Attachment of Insulation:
1. Mechanically fasten first layer of insulation to deck in accordance with roofing manufacturer's instructions and Factory Mutual requirements.
 2. Embed second layer of insulation into full bed of adhesive in accordance with roofing and insulation manufacturers' instructions.
- D. Lay subsequent layers of insulation with joints staggered minimum 6 inch from joints of preceding layer.
- E. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.
- F. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- G. Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.
- H. At roof drains, use factory-tapered boards to slope down to roof drains over a distance of 18 inches.
- I. Do not apply more insulation than can be covered with membrane in same day.

3.6 MEMBRANE APPLICATION

- A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.
- B. Shingle joints on sloped substrate in direction of drainage.
- C. Fully Adhered Application: Apply adhesive to substrate at rate of manufacturer recommended gal/square. Fully embed membrane in adhesive except in areas directly over or within 3 inches of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.
- D. Overlap edges and ends and seal seams by contact adhesive, minimum 3 inches. Seal permanently waterproof. Apply uniform bead of sealant to joint edge.
- E. At intersections with vertical surfaces:

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1. Extend membrane over cant strips and up a minimum of 4 inches onto vertical surfaces.
2. Fully adhere flexible flashing over membrane and up to nailing strips.
3. Secure flashing to nailing strips at 4 inches on center.

F. At gravel stops, extend membrane under gravel stop and to the outside face of the wall.

G. Around roof penetrations, seal flanges and flashings with flexible flashing.

H. Coordinate installation of roof drains and sumps and related flashings.

3.7 FINISHING UNBALLASTED SURFACES

A. Install walkway pads. Space pad joints to permit drainage.

B. Install walkway pads at existing roof: Adhere to the roofing membrane, spacing each pad at minimum of 1.0 inch and maximum of 3.0 inches from each other to allow for drainage.

1. If installation of walkway pads over field fabricated splices or within 6 inches of a splice edge cannot be avoided, adhere another layer of flashing over the splice and extending beyond the walkway pad a minimum of 6 inches on either side.
2. Prime the membrane, remove the release paper on the pad, press in place, and walk on pad to ensure proper adhesion.

3.8 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for field quality control and inspection.

B. Require site attendance of roofing and insulation material manufacturers daily during installation of the Work.

3.9 CLEANING

A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.

B. Remove bituminous markings from finished surfaces.

C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.

D. Repair or replace defaced or damaged finishes caused by work of this section.

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3.10 PROTECTION

- A. Protect installed roofing and flashings from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION 07 54 00

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SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Non-fire-rated hollow metal doors and frames.
- B. Fire-rated hollow metal doors and frames.
- C. Thermally insulated hollow metal doors with frames.
- D. Hollow metal borrowed lites glazing frames.
- E. Accessories, including glazing.

1.2 RELATED REQUIREMENTS

- A. Section 08 71 00 - Door Hardware.
- B. Section 08 80 00 - Glazing: Glass for doors and borrowed lites.
- C. Section 09 91 13 - EXTERIOR PAINTING: Field painting.
- D. Section 09 91 23 - Interior Painting: Field painting.

1.3 ABBREVIATIONS AND ACRONYMS

- A. ANSI - American National Standards Institute.
- B. ASCE - American Society of Civil Engineers.
- C. HMMA - Hollow Metal Manufacturers Association.
- D. NAAMM - National Association of Architectural Metal Manufacturers.
- E. NFPA - National Fire Protection Association.
- F. SDI - Steel Door Institute.
- G. UL - Underwriters Laboratories.

1.4 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

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- B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2022.
- C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2017.
- D. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2020.
- E. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2022.
- G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2021a.
- H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
- I. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).
- J. ASTM E1332 - Standard Classification for Rating Outdoor-Indoor Sound Attenuation; 2022.
- K. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2016.
- L. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- M. NAAMM HMMA 805 - Recommended Selection and Usage Guide for Hollow Metal Doors and Frames; 2012.
- N. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.
- O. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.
- P. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2017.
- Q. NAAMM HMMA 850 - Fire-Rated Hollow Metal Doors and Frames; 2014.
- R. NAAMM HMMA 860 - Guide Specifications for Hollow Metal Doors and Frames; 2018.

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- S. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.
- T. NAAMM HMMA 865 - Guide Specifications for Sound Control Hollow Metal Door and Frame Assemblies; 2013.
- U. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.
- V. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2022.
- W. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.
- X. UL (BMD) - Building Materials Directory; current edition.
- Y. UL (DIR) - Online Certifications Directory; Current Edition.
- Z. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- AA. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- BB. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.
- C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.
- D. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.
- E. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

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1. Exterior door products shall carry Miami-Dade County Notice of Acceptance (NOA).

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

C. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes installation requirements.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Hollow Metal Doors and Frames:

1. Basis of Design:

a. Daybar Industries Limited: www.daybar.com.

2. Other acceptable manufacturers:

a. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com.

b. Steelcraft, an Allegion brand: www.allegion.com/us.

3. Substitutions: Not allowed.

2.2 DESIGN CRITERIA

A. Requirements for Hollow Metal Doors and Frames:

1. Steel used for fabrication of doors and frames shall comply with one or more of the following requirements; Galvannealed steel conforming to ASTM A653/A653M, cold-rolled steel conforming to ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel conforming to ASTM A1011/A1011M, Commercial Steel (CS) Type B for each.

2. Accessibility: Comply with ICC A117.1 and ADA Standards.

3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.

4. Door Edge Profile: Hinged edge square, and lock edge beveled.

5. Typical Door Face Sheets: Flush.

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6. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturers standard.
 7. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
 8. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
 - a. Based on NAAMM HMMA Custom Guidelines: Provide at least A25/ZF75 (galvannealed) for interior applications, and at least A60/ZF180 (galvannealed) or G60/Z180 (galvanized) for corrosive locations.
- B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.3 HOLLOW METAL DOORS

- A. Exterior Doors: Thermally insulated.
1. Based on NAAMM HMMA Custom Guidelines:
 - a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
 - b. Performance Level 3 - Heavy Duty, in accordance with NAAMM HMMA 805.
 - c. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
 - d. Door Face Metal Thickness: 16 gage, 0.053 inch, minimum.
 - e. Zinc Coating: G60/Z180; ASTM A653/A653M.
 2. Core Material: Manufacturers standard core material/construction and in compliance with requirements.
 3. Door Thickness: 1-3/4 inch, nominal.
 4. Top Closures: Flush with top of faces and edges.
 5. Door Face Sheets: Flush.
 6. Weatherstripping: Refer to Section 08 71 00.
 7. Door Finish: Factory primed and field finished.
- B. Interior Doors, Non-Fire Rated:
1. Based on NAAMM HMMA Custom Guidelines:

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- a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
 - b. Performance Level 2 - Moderate Duty, in accordance with NAAMM HMMA 805.
 - c. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
 - d. Door Face Metal Thickness: 16 gage, 0.053 inch, minimum.
 - e. Zinc Coating: A25/ZF75 galvanized coating; ASTM A653/A653M.
2. Core Material: Manufacturers standard core material/construction and in compliance with requirements.
 3. Door Thickness: 1-3/4 inch, nominal.
 4. Door Finish: Factory finished.

C. Fire-Rated Doors:

1. Based on NAAMM HMMA Custom Guidelines: Comply with NAAMM HMMA 850 requirements for fire-rated doors.
 - a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
 - b. Performance Level 2 - Moderate Duty, in accordance with NAAMM HMMA 805.
 - c. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
 - d. Door Face Metal Thickness: 16 gage, 0.053 inch, minimum.
 - e. Zinc Coating: A25/ZF75 galvanized coating; ASTM A653/A653M.
2. Fire Rating: As indicated on Door Schedule, tested in accordance with UL 10C and NFPA 252 ("positive pressure fire tests").
 - a. Temperature-Rise Rating (TRR) Across Door Thickness: In accordance with local building code and authorities having jurisdiction (AHJ).
 - b. Provide units listed and labeled by UL (Underwriters Laboratories) - UL (BMD), WH (Warnock Hersey) - ITS (DIR), UL (Underwriters Laboratories) - UL (BMD), or WH (Warnock Hersey) - ITS (DIR).
 - c. Attach fire rating label to each fire rated unit.
 - d. Smoke and Draft Control Doors (Indicated with letter "S" on Drawings and/or Door Schedule): Self-closing or automatic closing doors in accordance with NFPA 80 and NFPA 105, with fire-resistance-rated wall construction rated the same or greater than the fire-rated doors, and the following;
 - 1) Maximum Air Leakage: 3.0 cfm/sq ft of door opening at 0.10 inch w.g. pressure, when tested in accordance with UL 1784 at both ambient and elevated temperatures.
 - 2) Gasketing: Provide gasketing or edge sealing as necessary to achieve leakage limit.
 - 3) Label: Include the "S" label on fire-rating label of door.

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3. Core Material: Manufacturers standard core material/construction in compliance with requirements.
4. Door Thickness: 1-3/4 inch, nominal.
5. Door Finish: Factory primed and field finished.

D. Sound-Rated Interior Doors:

1. Based on NAAMM HMMA Custom Guidelines:
 - a. Comply with guidelines of NAAMM HMMA 865 for Sound Control Hollow Metal Doors and Frames.
 - b. Performance Level 2 - Moderate Duty, in accordance with NAAMM HMMA 805.
 - c. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
 - d. Door Face Metal Thickness: 16 gage, 0.053 inch, minimum.
 - e. Zinc Coating: A25/ZF75 galvanized coating; ASTM A653/A653M.
2. Door Thickness: As required to meet acoustic requirements indicated.

2.4 HOLLOW METAL FRAMES

- A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B. Exterior Door Frames: Full profile/continuously welded type.
 1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A60/ZF180 coating.
 2. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
 3. Frame Finish: Galvanized, field painted.
 4. Zinc Coating: [G60/Z180]; ASTM A653/A653M.
 5. Weatherstripping: Separate, see Section 08 71 00.
- C. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
 1. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
 2. Frame Finish: Factory primed and field finished.
 3. Zinc Coating: A25/ZF75 galvanized coating; ASTM A653/A653M.
- D. Door Frames, Fire-Rated: Full profile/continuously welded type.
 1. Fire Rating: Same as door, labeled.
 2. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
 3. Frame Finish: Factory primed and field finished.
 4. Zinc Coating: A25/ZF75 galvanized coating; ASTM A653/A653M.
- E. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.

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- F. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.
- G. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
- H. Frames Wider than 48 Inch: Reinforce with steel channel fitted tightly into frame head, flush with top.

2.5 FINISHES

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

2.6 ACCESSORIES

- A. Glazing: As specified in Section 08 80 00, factory installed.
- B. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.
- C. Astragals for Double Doors: Specified in Section 08 7100.
- D. Mechanical Fasteners for Concealed Metal-to-Metal Connections: Self-drilling, self-tapping, steel with electroplated zinc finish.
 - 1. Products:
 - a. ITW Commercial Construction North America; ITW CCNA-Buildex Tek Select Series: www.ITWBuildex.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- E. Grout for Frames: Portland cement grout with maximum 4 inch slump for hand troweling; thinner pumpable grout is prohibited.
- F. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.
- G. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

2.7 FINISHES

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.
- B. Bituminous Coating: Asphalt emulsion or other high-build, water-resistant, resilient coating.

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PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Verify that finished walls are in plane to ensure proper door alignment.

3.2 PREPARATION

- A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.3 INSTALLATION

- A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.
- B. Install fire rated units in accordance with NFPA 80.
- C. Coordinate frame anchor placement with wall construction.
- D. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.
- E. Coordinate installation of hardware.
- F. Coordinate installation of glazing.
- G. Coordinate installation of electrical connections to electrical hardware items.
- H. Touch up damaged factory finishes.

3.4 TOLERANCES

- A. Clearances Between Door and Frame: Comply with related requirements of specified door and frame standards or custom guidelines indicated.
- B. Maximum Diagonal Distortion: 1/16 in measured with straight edge, corner to corner.

3.5 ADJUSTING

- A. Adjust for smooth and balanced door movement.

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- B. Adjust sound control doors so that seals are fully engaged when door is closed.

3.6 SCHEDULE

- A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION 08 11 13

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SECTION 08 31 13 - INTERIOR NON-RATED ACCESS DOORS AND PANELS

PART 1: GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including supplementary conditions and Division 1 specification sections, apply to this section.

1.2 SUMMARY

- A. Includes access panels for the following applications:
 1. Wall access panels
 2. Ceiling access panels

1.3 RELATED SECTIONS:

- A. Section 06 10 00 - Rough Carpentry.
- B. Section 092116 - Gypsum Board Assemblies.

1.4 SUBMITTALS

- A. General: In accordance with conditions of Division 1 specifications
- B. Manufacturer's submittals documents and installation instructions.

1.5 QUALITY ASSURANCE

- A. Provide all access panels for the project by the same manufacturer.
- B. All access panels shall be supplied by a single manufacturer under a single contract.
- C. Obtain design professional's approval for all panel sizes that vary from the general dimensions listed in these specifications, if they are not in accordance with manufacturer's standards.

1.6 COORDINATION & RESPONSIBILITY FOR ACCESS PANELS ON SITE

- A. Determine specific locations and sizes for access panels needed to gain access to concealed equipment & indicate on schedule specified under "submittals" article.

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- B. Access panels to gain access to equipment specified in Division 15 & 16 and where panels are not shown on drawings are to be provided by the applicable subcontractor and in compliance with requirements listed in these sections.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Package and ship in manufacturer’s original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store indoors in a dry area out of direct sunlight in compliance to manufacturer’s instructions.
- C. Protect materials and finishes from damage during handling and installation.

PART 2: PRODUCTS

2.1 MANUFACTURER / DISTRIBUTOR

- A. Basis of Design:
 - 1. Bauco Access Panel Solutions, Inc.; BaucoPlus-II: www.accesspanelsolutions.com.
 - 2. Other acceptable manufacturers:
 - a. Acudor Access Panels: www.acudoraccesspanels.com.
 - b. FF Systems: www.ffsystems.com.
 - 3. Substitutions: See Section 01 25 00 - Substitution Procedures.

2.2 GENERAL PURPOSE ACCESS PANELS:

- A. BaucoPlus-II series: Non-rated recessed access doors with concealed hardware and gypsum board inlay for flush installation.
- B. Material Overview: Extruded aluminum alloy 6063-T6 frames and supports complete with 5/8" (15.9 mm) or 1/2" (12.7 mm) moisture and mold resistant gypsum board inlay and galvanized internal steel corner reinforcing. Zinc-plated hardened steel screws, free pivot hinge, safety cable with carabiner hook, vinyl screw caps, and EPDM rubber gaskets.
- C. Door: Fabricate using 2.8 mm thick extruded aluminum alloy 6063-T6 frame, screwed in place gypsum board inlay complete with galvanized internal steel corner reinforcing. Exposed top edge of frames shall have a concave meniscus rise to 0.5mm thick to accept finishing compound allowing a near invisible flush frame finish.

INTERIOR NON-RATED ACCESS DOORS AND PANELS 08 31 13	2 of 5
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- D. Frame: Recessed aluminum frame shall provide an edge similar to drywall bead against which the ceiling or wall surface shall be finished allowing a near invisible flush frame finish. Fabricate using 2.8mm thick extruded aluminum alloy 6063-T6 frame, complete with galvanized internal steel corner reinforcing. Frame opening complete with perimeter EPDM gasket maintaining the STC of gypsum board assembly.
1. Frame model specification:
 - a. BPII 58 - for 5/8 board.
 - b. BPII 12 - for 1/2" board.
- E. Board: Access Panel inlay shall equal the wall & ceiling specifications to ensure acoustic integrity.
1. Board Inlay specification:
 - a. baucoplus-II supplied standard with moisture and mold resistant gypsum board inlay
 - b. baucoplus-II supplied with tile backer board
 - c. baucoplus-II supplied with increased STC rating options
 - d. baucoplus-II supplied with other wallboard specification as required
- F. Hinge Detail: Concealed, galvanized steel free pivot hinge shall allow all doors to open 120 degrees. All access panel doors shall be fully removable and complete with a safety cable to secure doors to panel frames with a safety cable, test rated for 135lb (61kg), nylon coated, with crimp connections and spring snap aluminum carabiner.
- G. Hinge Location:
1. baucoplus-II panels for ceiling installation will be hinged on the longest side unless specified. When baucoplus-II panels are used in a wall installation, the hinges must be located on the floor side. The last 2 digits of the product code will always be the hinge location, and always the horizontal measurement for a wall installation.
- H. Latching/Locking devices:
1. Concealed touch latch - standard
 2. (Optional) Slotted screwdriver cam latch
 3. (Adds -CAM to product code)
 4. (Optional) Key operated cylinder lock, (2) keys per lock, keyed alike
 - a. (Add -K to product code)
 5. (Optional) Tamper-resistant torx head cam latches
 - a. (Add -TX to product code)
- I. Finish: baucoplus-II series access panels require finishing using common trade tools. For best results, setting-type gypsum finishing compound is recommended. Apply compound separately to the door leaf and surrounding wall or ceiling area up to recessed access panel frame. No taping required. Door shall receive the same finish

INTERIOR NON-RATED ACCESS DOORS AND PANELS 08 31 13	3 of 5
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and paint as the surrounding surfaces. When installed and finished the access panel shall be completely flush with the wall or ceiling surface and only a one sixteenth of an inch shadow gap shall be visible.

2.3 FABRICATION

- A. Manufacture each access panel assembly as an integral unit ready for site installation.
- B. Furnish number of latches required to hold door flush for a smooth uniform panel appearance when closed.
- C. Larger sizes bracing will be added to add rigidity and/or prevent sagging.
- D. Supply rear of panel door with acoustic treatment when specified.
- E. Provide installation instructions with each panel.
- F. Rear of panel door leaf label indicating product model and size.

PART 3: EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive access doors. Notify Architect if areas are not acceptable. Do not begin installation until unacceptable conditions have been corrected.

3.2 PREPARATION

- A. Advise installers of work relating to access panel installation including rough opening dimensions, locations of supports, and anchoring methods. Coordinate delivery with other work to avoid delay.

3.3 INSTALLATION

- A. Follow manufacturer's instructions for installing access panels. Install access doors plumb, level, and square.
- B. Anchor frames securely in place.
- C. Set frames to proper alignment with the wall or ceiling.
- D. Position access panels for proper access to concealed equipment requiring access.

INTERIOR NON-RATED ACCESS DOORS AND PANELS 08 31 13	4 of 5
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3.4 ADJUST AND CLEAN

- A. Adjust panel after installation for proper operation. Remove drywall compound from hinge, frame and door leaf edge. Clean the frame and door with a damp cloth.
- B. Remove and replace panels or frames that are warped, bowed, or damaged.

END OF SECTION 08 31 13

INTERIOR NON-RATED ACCESS DOORS AND PANELS 08 31 13	5 of 5
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SECTION 08 33 13 - COILING COUNTER DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Non-fire-rated coiling counter doors and operating hardware.

1.2 RELATED REQUIREMENTS

- A. Section 09 91 23 - Interior Painting: Field paint finish.

1.3 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- C. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- D. ITS (DIR) - Directory of Listed Products; Current Edition.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturer's standard literature showing materials and details of construction and finish.
- C. Shop Drawings: Indicate rough and actual opening dimensions, anchorage methods, hardware locations, and installation details.
- D. Samples: Two slats, 4 inches long, illustrating shape, color, and finish texture.
- E. Manufacturer's Installation Instructions: Indicate installation sequence and installation, adjustment, and alignment procedures.
- F. Manufacturer's qualification statement.
- G. Installer's qualification statement.

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1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.6 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 2-year manufacturer warranty for counterbalance shaft assembly. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Coiling Counter Doors:
 1. Basis of Design: Dynamic Closures, Inc; Mini Roll Up Shutter: www.dynamicclosures.com. Model RF40
 2. Other acceptable manufacturers:
 - a. C.H.I. Overhead Doors: www.chiohd.com/#sle.
 - b. Raynor Garage Doors: www.raynor.com/#sle.
 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 COILING COUNTER DOORS

- A. Coiling Counter Metal Doors, Non-Fire-Rated: Aluminum slat curtain.
 1. Mounting: Between jambs, within prepared opening.
 2. Nominal Slat Size: 1.575 inches wide.
 3. Slat Profile: Flat, perforated.
 4. Finish, Aluminum: Anodized.
 5. Color: As indicated on drawings.
 6. Guides: Formed track; same material and finish unless otherwise indicated.
 7. Manual hand chain lift operation.
 8. Locking Devices: Chain lock keeper on inside.

2.3 COMPONENTS

- A. Metal Curtain Construction: Interlocking, single-thickness slats.
 1. Slat Ends: Alternate slats fitted with end locks to act as wearing surface in guides and to prevent lateral movement.

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2. Curtain Bottom: Fitted with tube to provide reinforcement and positive contact in closed position.
 3. Aluminum Slats: ASTM B221 (ASTM B221M), aluminum alloy Type 6063; minimum thickness 0.05 inch.
- B. Guide Construction: Continuous, of profile to retain door in place, with mounting brackets of same metal.
1. Aluminum Guides: Extruded aluminum channel, with wool pile runners along inside.
- C. Lock Hardware:
1. Latchset Lock Cylinders: Standard mortise cylinder type; keyed differently.
 - a. Keying: Differently.
 2. Latch Handle: Manufacturer's standard.
- D. Roller Shaft Counterbalance: Steel pipe and torsion steel spring system, capable of producing torque sufficient to ensure smooth operation of curtain from any position and capable of holding position at mid-travel; with adjustable spring tension; requiring 25 lb nominal force to operate.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that adjacent construction is suitable for door installation.
- B. Verify that electrical services have been installed and are accessible.
- C. Verify that door opening is plumb, header is level, and dimensions are correct.
- D. Notify Architect of any unacceptable conditions or varying dimensions.
- E. Commencement of installation indicates acceptance of substrate and door opening conditions.

3.2 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

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- D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

3.3 TOLERANCES

- A. Maintain dimensional tolerances and alignment with adjacent work.
- B. Maximum Variation From Plumb: 1/16 inch.
- C. Maximum Variation From Level: 1/16 inch.
- D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch per 10 ft straight edge.

3.4 ADJUSTING

- A. Adjust operating assemblies for smooth and noiseless operation.

3.5 CLEANING

- A. Clean installed components.
- B. Remove labels and visible markings.

END OF SECTION 08 33 13

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SECTION 08 42 29 - AUTOMATIC ENTRANCES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Packaged power-operated door assemblies.
 - 1. Swinging type.
- B. Controllers, actuators and safety devices.
- C. Maintenance.

1.2 RELATED REQUIREMENTS

- A. Section 28 31 00 - Addressable Fire Alarm Detection System: Connection to fire alarm system.

1.3 DEFINITIONS

- A. AAADM: American Association of Automatic Door Manufacturers.

1.4 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).
- C. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2023.
- D. BHMA A156.10 - Power Operated Pedestrian Doors; 2017.
- E. BHMA A156.19 - Power Assist and Low Energy Power Operated Swinging Doors; 2019.
- F. NEMA MG 1 - Motors and Generators; 2021.

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- G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL (DIR) - Online Certifications Directory; Current Edition.
- I. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
 - 1. Indicate layout and dimensions; head, jamb, and sill conditions; elevations; components, anchorage, recesses, materials, and finishes, electrical characteristics and connection requirements.
 - 2. Identify installation tolerances required, assembly conditions, routing of service lines and conduit, and locations of operating components and boxes.
- C. Product Data: Provide data on system components, sizes, features, and finishes.
- D. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and manufacturer's hardware and component templates.
- E. Manufacturer's Qualification Statement.
- F. Installer's Qualification Statement.
- G. Maintenance Contract.
- H. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.
- I. Maintenance Data: Include manufacturer's parts list and maintenance instructions for each type of hardware and operating component.
- J. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

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- B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years of experience.

1.7 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide two year manufacturer warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Swinging Automatic Entrance Door Assemblies:
 - 1. Basis of Design:
 - a. ASSA ABLOY Entrance Solutions; Besam SW200i: www.besam-usa.com/#sle.
 - 2. Other acceptable manufacturers:
 - a. Horton Automatics: www.hortondoors.com.
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 POWER OPERATED DOORS

- A. Power Operated Doors: Provide products that comply with the requirements of the authorities having jurisdiction; unless otherwise indicated, provide equipment selected for the actual weight of the doors and for light pedestrian traffic.
 - 1. Swinging Door Operators: Fully adjustable for opening and closing speeds, checking speeds, and hold-open time; in the event of power failure, disengage operator allowing door to function as a door with a spring closer.
 - 2. Packaged Door Assemblies: Provide all components by single manufacturer, factory-assembled, including doors, frames, operators, actuators, and safeties.
 - a. Finish exposed equipment components to match door and frame finish.
 - 3. Exterior and Vestibule Doors: Provide equipment suitable for operating temperature range of minus 20 to plus 140 degrees F ambient.
- B. Swinging Doors with Full Power Operators: Comply with BHMA A156.10; safeties required.
 - 1. Comply with UL 325; acceptable evidence of compliance includes current UL or ULC listing.
 - 2. Force Required to Set Door in Motion When Unpowered: 30 pounds-force, maximum, measured at 1 inch from the latch edge of the door at any point in the closing cycle.

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- C. Operators:
 1. Electric Operators: 1/2 hp minimum, self-contained, gear driven, with release clutch.

2.3 PACKAGED AUTOMATIC ENTRANCE DOOR ASSEMBLIES

- A. Comply with ADA Standards for egress requirements.
- B. Framing and Transom Members: Provide manufacturer's standard extruded aluminum framing, reinforced as required to support imposed loads.
 1. Transoms: Provide flush glazed transom with framing that is integral with automatic entrance framing system.
- C. Swinging Automatic Door: Single-acting hinged, electric operation, extruded aluminum glazed door, with extruded tubular frame, and operator concealed overhead.
 1. Operation: Full-power open, power close operation.
 2. "Push" Side Actuator: Push plate.
 3. "Pull" Side Actuator: Push plate.
 4. "Pull" Side Safety: Door-mounted.
 5. Hold Open: Toggle switch at inside head of doors; this is not a fire-rated door.
 6. Door and Frame Finish: Same as adjacent framing system.

2.4 CONTROLLERS, ACTUATORS, AND SAFETIES

- A. Controller: Provide microprocessor operated controller for each door.
- B. Comply with BHMA A156.10 for actuator and safety types and zones.
- C. Push Plate Actuator: Standard wall mounted, recessed momentary contact type; satin stainless steel plate; 4 inches diameter; labeled PUSH.
- D. Swinging Door Safety Device: Door-mounted proximity detector device arranged to prevent operation of door when persons or obstructions are in the swing zone.

2.5 ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. Provide shielded and explosion proof electrical devices at each location.
- B. Motors: NEMA MG 1.
- C. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70.
- D. Disconnect Switch: Factory mount disconnect switch in control panel.

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2.6 ACCESSORIES

- A. Steel Clips, Supports, and Steel Anchors: Galvanized to 1.25 ounces per square foot.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work and dimensions are as indicated on shop drawings.
- B. Verify that electric power is available and is of the correct characteristics.

3.2 INSTALLATION

- A. Install equipment in accordance with manufacturer's instructions.
- B. Provide for thermal expansion and contraction of door and frame units and live and dead loads that may be transmitted to operating equipment.
- C. Provide for dimensional distortion of components during operation.
- D. Coordinate installation of components with related and adjacent work; level and plumb.

3.3 ADJUSTING

- A. Adjust door equipment for correct function and smooth operation.

3.4 CLEANING

- A. Remove temporary protection, clean exposed surfaces.

3.5 CLOSEOUT ACTIVITIES

- A. Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.6 MAINTENANCE

- A. See Section 01 70 00 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.

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- B. Provide service and maintenance of operating equipment for one year from Date of Substantial Completion, at no extra charge to Owner.

END OF SECTION 08 42 29

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SECTION 08 43 13 - ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Aluminum-framed storefront, with vision glass.
- B. Aluminum doors and frames.
- C. Weatherstripping.
- D. Door hardware.

1.2 RELATED REQUIREMENTS

- A. Section 05 50 00 - Metal Fabrications: Steel attachment devices.
- B. Section 08 42 29 - Automatic Entrances.
- C. Section 08 80 00 - Glazing: Glass and glazing accessories.

1.3 REFERENCE STANDARDS

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2015.
- B. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems; 2015.
- C. AAMA 503 - Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls and Sloped Glazing Systems; 2014.
- D. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- E. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.
- F. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

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- G. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- H. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- I. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- J. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- K. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).
- L. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).
- M. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).
- N. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors; 2002 (Reapproved 2018).
- O. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015 (Reapproved 2023).
- P. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2023.
- Q. FLA (PAD) - Florida Building Code Online - Product Approval Directory; Current Edition.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with installation of other components that comprise the exterior enclosure.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

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1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details .
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
 - 1. Include design engineer's stamp or seal on shop drawings for attachments and anchors.
- D. Samples: Submit two samples 6 x 6 inches in size illustrating finished aluminum surface, glass, glazing materials.
- E. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.
- F. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.
 - 1. Design structural supports and anchorages under direct supervision of a licensed Structural Engineer experienced in design for this type of Work and licensed in State that Project is located. Engineering information provided shall be signed and sealed by the Structural Engineer.
- G. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.
- H. Field Quality Control Submittals: Report of field testing for water penetration and air leakage and air leakage.
- I. Designer's qualification statement.
- J. Manufacturer's qualification statement.
- K. Installer's qualification statement.
- L. Specimen warranty.

1.6 QUALITY ASSURANCE

- A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.

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- B. Manufacturer and Installer Qualifications: Company specializing in manufacturing aluminum glazing systems with minimum five years of documented experience.
 - 1. Provide certified glass products through ANSI accredited certifications that include plant audits and independent laboratory performance testing.
 - a. Insulating Glass Certification Council (IGCC).
- C. Installer Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience.
 - 1. Provide company, field supervisors, and installers that hold active ANSI accredited certifications in appropriate categories for work specified.
 - a. North American Contractor Certification (NACC) for glazing contractors.
 - b. Equivalent independent third-party ANSI accredited certification.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.8 FIELD CONDITIONS

- A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.9 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- C. Provide 20 year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Aluminum-Framed Storefronts:
 - 1. Basis of Design:

Aluminum-Framed Storefronts 08 43 13	4 of 10
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- a. YKK AP America, Inc; YHS 50 TU: www.ykkap.com/commercial/#sle.
2. Other acceptable manufacturers:
 - a. Oldcastle BuildingEnvelope: www.oldcastlebe.com/#sle.
 - b. Pittco Architectural Metals Inc: www.pittcometals.com/#sle.
 - c. Kawneer: www.kawneer.us.
 - d. Trulite Glass & Aluminum Solutions, LLC: www.trulite.com/#sle.
3. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 BASIS OF DESIGN -- FRAMING FOR INSULATING GLAZING

- A. Front-Set Style, Thermally-Broken:
 1. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.

2.3 BASIS OF DESIGN -- SWINGING DOORS

- A. Wind-Borne-Debris Resistance Tested:
 1. Basis of Design: YHS 50 TU.
- B. Narrow Stile, Insulating Glazing, Thermally-Broken:
 1. Basis of Design: YHS 50 TU.
 2. Thickness: 2 inches.
- C. Substitutions: See Section 01 25 00 - Substitution Procedures.
 1. For any product not identified as "Basis of Design", submit information as specified for substitutions.

2.4 ALUMINUM-FRAMED STOREFRONT

- A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
 1. Finish: Superior performing organic coatings.
 - a. Factory finish all surfaces that will be exposed in completed assemblies.
 - b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
 - c. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
 2. Finish Color: As selected by Architect from manufacturer's standard line.
 3. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
 4. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.

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5. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
6. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
7. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
8. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.

B. Performance Requirements

1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
 - a. Design Wind Loads: Comply with requirements of ASCE 7.
 - b. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
2. Wind-Borne-Debris Resistance: Identical full-size glazed assembly without auxiliary protection, having Florida Building Code FLA (PAD) approval for Large and Small Missile impact and pressure cycling at design wind pressure.
3. Water Penetration Resistance on Manufactured Assembly: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 8 psf.
4. Air Leakage: 0.06 cfm/sq ft maximum leakage of storefront wall area when tested in accordance with ASTM E283/E283M at 1.57 psf pressure difference.
5. Air Leakage: 0.06 cfm/sq ft maximum leakage of storefront wall area when tested in accordance with ASTM E283/E283M at 1.57 psf pressure difference.

2.5 COMPONENTS

- A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
 1. Glazing Stops: Flush.
 2. Cross-Section: As indicated on drawings.
- B. Glazing: See Section 08 80 00.
- C. Swing Doors: Glazed aluminum.

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1. Manufacturer: Same as for storefront.
2. Thickness: 2-3/16 inches.
3. Top Rail: 4 inches wide.
4. Bottom Rail: 10 inches wide.
5. Glazing Stops: Square.
6. Finish: Same as storefront.

2.6 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Fasteners: Stainless steel.
- C. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

2.7 FINISHES

- A. Superior Performing Organic Coatings: AAMA 2605 multiple coat, thermally cured polyvinylidene fluoride system.
 1. Polyvinylidene fluoride (PVDF) multi-coat thermoplastic fluoropolymer coating system, including minimum 70 percent PVDF color topcoat and minimum total dry film thickness of 0.9 mil; color and gloss as indicated on drawings.
 - a. Products:
 - 1) PPG Metal Coatings; Duranar: www.ppgideascape.com/#sle.
 - 2) Sherwin-Williams Company; SHER-NAR 5000: oem.sherwin-williams.com/#sle.
 - 3) Substitutions: See Section 01 60 00 - Product Requirements.

2.8 HARDWARE

- A. For each door, include weatherstripping, sill sweep strip, and threshold.
- B. Other Door Hardware: Storefront manufacturer's standard type to suit application.
 1. Finish on Hand-Contacted Items: Polished stainless steel.
 2. For each door, include butt hinges, pull handle, exit device, and closer.
- C. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.
- D. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.

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- E. Threshold: Extruded aluminum, one piece per door opening, ribbed surface; provide on all exterior doors.
- F. Hinges: Butt type, swing clear; top, intermediate, and bottom.
 - 1. Provide on all doors.
- G. Push/Pull Set: Standard configuration push/pull handles.
- H. Exit Devices: Panic type.
 - 1. Provide on all doors.
- I. Door Closers: Concealed overhead.
 - 1. Provide on all doors.
- J. Locks: Dead latch with thumbturn inside ; keyed cylinder outside.
 - 1. Provide on all doors.
- K. Automatic Door Operators and Actuators: See Section 08 42 29.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that storefront wall openings and adjoining water-resistive and/or air barrier seal materials are ready to receive work of this section.

3.2 INSTALLATION

- A. Install wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

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- G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
- H. Set thresholds in double bed of sealant and secure.
- I. Install hardware using templates provided.
 - 1. See Section 08 42 29 for operator and actuator installation requirements.
- J. Install glass in accordance with Section 08 80 00, using glazing method required to achieve performance criteria.
- K. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.3 TOLERANCES

- A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.4 FIELD QUALITY CONTROL

- A. Provide services of storefront manufacturer's field representative to observe for proper installation of system and submit report.
- B. See Section 01 40 00 - Quality Requirements for independent field testing and inspection requirements, and requirements for monitoring quality of specified product installations.
- C. Water-Spray Test: Provide water spray quality test of installed storefront components in accordance with AAMA 501.2 during construction process and before installation of interior finishes.
 - 1. Perform a minimum of two tests in each designated area as indicated on drawings.
 - 2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.
- D. Provide field testing of installed storefront system by independent laboratory in accordance with AAMA 503 during construction process and before installation of interior finishes.
 - 1. Perform a minimum of two tests in each designated area as indicated on drawings.
 - 2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.

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- 3. Field test for water penetration in accordance with ASTM E1105 with uniform static air pressure difference (Procedure A) not less than 4.18 psf.
 - a. Maximum allowable rate of water penetration in 15-minute test is 0.5 ounce that is not contained in an area with provisions to drain to exterior, or collected on surface of interior horizontal framing member.
- 4. Field test for air leakage in accordance with ASTM E783 with uniform static air pressure difference of 1.57 psf.
 - a. Maximum allowable rate of air leakage is 0.09 cfm/sq ft.
- E. Repair or replace storefront components that have failed designated field testing, and retest to verify performance complies with specified requirements.

3.5 ADJUSTING

- A. Adjust operating hardware for smooth operation.

3.6 CLEANING

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.
- C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.7 PROTECTION

- A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION 08 43 13

**SECTION 087100
DOOR HARDWARE**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hardware for wood, aluminum, and hollow metal doors.
- B. Hardware for fire-rated doors.
- C. Electrically operated and controlled hardware.
- D. Lock cylinders for doors with balance of hardware specified in other sections.
- E. Thresholds.
- F. Weatherstripping and gasketing.

1.02 RELATED REQUIREMENTS

- A. Section 079200 - Joint Sealants: Sealants for setting exterior door thresholds.
- B. Section 080671 - Door Hardware Schedule: Schedule of door hardware sets.
- C. Section 081113 - Hollow Metal Doors and Frames.
- D. Section 081116 - Aluminum Doors and Frames.
- E. Section 081416 - Flush Wood Doors.
- F. Section 081433 - Stile and Rail Wood Doors.
- G. Section 084313 - Aluminum-Framed Storefronts: Door hardware, except as noted in section.
- H. Section 261000: Power supply to electric hardware devices.
- I. Section 102600 - Wall and Door Protection: Door and frame protection.
- J. Section 281000 - Access Control: Electronic access control devices.

1.03 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.
- B. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen 2019.
- C. BHMA A156.1 - Standard for Butts and Hinges 2021.
- D. BHMA A156.3 - Exit Devices 2020.
- E. BHMA A156.4 - Door Controls - Closers 2019.
- F. BHMA A156.5 - Cylinders and Input Devices for Locks 2020.
- G. BHMA A156.6 - Standard for Architectural Door Trim 2021.
- H. BHMA A156.7 - Template Hinge Dimensions 2016.
- I. BHMA A156.8 - Door Controls - Overhead Stops and Holders 2021.
- J. BHMA A156.13 - Mortise Locks & Latches Series 1000 2017.
- K. BHMA A156.16 - Auxiliary Hardware 2018.
- L. BHMA A156.18 - Materials and Finishes 2020.
- M. BHMA A156.21 - Thresholds 2019.
- N. BHMA A156.22 - Standard for Gasketing 2021.
- O. BHMA A156.25 - Electrified Locking Devices 2018.
- P. BHMA A156.28 - Recommended Practices for Mechanical Keying Systems 2018.
- Q. BHMA A156.30 - High Security Cylinders 2020.
- R. BHMA A156.115 - Hardware Preparation In Steel Doors And Steel Frames 2016.

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- S. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames 2006.
- T. DHI (H&S) - Sequence and Format for the Hardware Schedule 2019.
- U. DHI (KSN) - Keying Systems and Nomenclature 2019.
- V. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames 2004.
- W. FLA (FBC-B) - Florida Building Code: Building (6th Edition) 2017.
- X. ICC (IBC) - International Building Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- Y. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.
- Z. ISO 9001 - Quality management systems -- Requirements 2015.
- AA. ITS (DIR) - Directory of Listed Products Current Edition.
- BB. MIL-STD-810 - Environmental Engineering Considerations and Laboratory Tests 2019h.
- CC. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- DD. NFPA 80 - Standard for Fire Doors and Other Opening Protectives 2022.
- EE. NFPA 101 - Life Safety Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- FF. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives 2022.
- GG. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies 2022.
- HH. Storm Codes:
 - 1. Florida Building Code.
- II. UL (DIR) - Online Certifications Directory Current Edition.
- JJ. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies Current Edition, Including All Revisions.
- KK. UL 294 - Access Control System Units Current Edition, Including All Revisions.
- LL. UL 437 - Standard for Key Locks Current Edition, Including All Revisions.
- MM. UL 1784 - Standard for Air Leakage Tests of Door Assemblies Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.
- B. Sequence installation to ensure facility services connections are achieved in an orderly and expeditious manner.
- C. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; require attendance by affected installers and the following:
 - 1. Architect.
 - 2. Installer's Architectural Hardware Consultant (AHC).
 - 3. Hardware Installer.
 - 4. Owner's Security Consultant.
- D. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.
- E. Keying Requirements Meeting:
 - 1. Architect will schedule meeting at project site prior to Contractor occupancy.
 - 2. Attendance Required:
 - a. Contractor.
 - b. Owner.
 - c. Architect.
 - d. Installer's Architectural Hardware Consultant (AHC).
 - e. Owner's Security Consultant.

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- f. BEST Key System Specialist.
- 3. Agenda:
 - a. Establish keying requirements.
 - b. Verify locksets and locking hardware are functionally correct for project requirements.
 - c. Verify that keying and programming complies with project requirements.
 - d. Establish keying submittal schedule and update requirements.
- 4. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
 - a. Access control requirements.
 - b. Key control system requirements.
- 5. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
- 6. Deliver established keying requirements to manufacturers.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
- C. Shop Drawings - Door Hardware Schedule: A detailed listing that includes each item of hardware to be installed on each door.
 - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
 - 2. Comply with DHI using door numbering scheme and hardware set numbers as indicated in Contract Documents.
 - a. Submit in vertical format.
 - 3. Include complete description for each door listed.
 - 4. Include manufacturer's and product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
 - 5. Include account of abbreviations and symbols used in schedule.
- D. Shop Drawings - Electrified Door Hardware: Include diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:
 - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC).
 - 2. Elevations: Include front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.
 - 3. Diagrams: Include point-to-point wiring diagrams that show each device in door opening system with related colored wire connections to each device.
- E. Samples for Verification:
 - 1. Submit minimum size of 2 by 4 inch (51 by 102 mm) for sheet samples, and minimum length of 4 inch (102 mm) for other products.
 - 2. Submit one (1) sample of hinge, latchset, lockset, closer, and illustrating style, color, and finish.
 - 3. Include product description with samples.
- F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- G. Manufacturer's qualification statement.
- H. Installer's qualification statement.
- I. Supplier's qualification statement.
- J. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

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- K. Keying Schedule:
 - 1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.
- L. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- M. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.
- N. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 016000 - Product Requirements, for additional provisions.
 - 2. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

1.06 QUALITY ASSURANCE

- A. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Architect and Contractor.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.
- D. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC) to assist in work of this section.
- E. Manufacturer Certifications: Provide products manufactured in facilities using quality management system certified for compliance with ISO 9001 and environmental management systems certified for compliance with ISO 14001.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide manufacturer warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion. Complete forms in Owner's name and register with manufacturer.
 - 1. Closers: Twenty-five years, minimum.
 - 2. Exit Devices: Five years, minimum.
 - 3. Locksets: Ten years, minimum.
 - 4. Cylinders: Three years, minimum
 - 5. Electrified Locksets: Three years
 - 6. Electrified Exit Devices: One year
 - 7. Hinges: Limited Lifetime
 - 8. Other Hardware: One year, minimum.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
- B. Provide individual items of single type, of same model, and by same manufacturer.
- C. Locks: Provide a lock for each door, unless it's indicated that lock is not required.
 - 1. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's Series. As indicated in hardware sets.
 - 2. Trim: Provide lever handle or pull trim on outside of each lock, unless otherwise indicated.
 - 3. Strikes:

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- a. Finish: To match lock or latch.
 - b. Curved-Lip Strikes: Provide as standard, with extended lip to protect frame, unless otherwise indicated.
 - c. Center Strike at Pairs of Doors: 7/8 inch (22.2 mm) lip.
- D. Door Pulls and Push Plates:
- E. Closers:
- 1. Provide door closer on each exterior door, unless otherwise indicated.
 - 2. Provide door closer on each fire-rated and smoke-rated door.
 - 3. Spring hinges are not an acceptable self-closing device, unless otherwise indicated.
- F. Overhead Stops and Holders (Door Checks).
- 1. Provide stop for every swinging door, unless otherwise indicated.
 - 2. Overhead Stop is not required if positive stop feature is specified for door closer; positive stop feature of door closer is not an acceptable substitute for a stop, unless otherwise indicated.
 - 3. Overhead stop is not required if a floor or wall stop has been specified for the door.
- G. Drip Guards: Provide at head of outswinging exterior doors unless protected by roof or canopy directly overhead.
- H. Thresholds:
- 1. Exterior Applications: Provide at each exterior door, unless otherwise indicated.
- I. Weatherstripping and Gasketing:
- 1. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.
 - 2. Provide door bottom sweep on each exterior door, unless otherwise indicated.
 - 3. Fabricate as continuous gasketing, do not cut or notch gasketing material.
- J. Electrically Operated and/or Controlled Hardware: Provide necessary power supplies, power transfer hinges, relays, and interfaces as required for proper operation; provide wiring between hardware and control components and to building power connection in compliance with NFPA 70.
- K. See Section 281000 for additional access control system requirements.
- L. Fasteners:
- 1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
 - a. Aluminum fasteners are not permitted.
 - b. Provide Phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
 - 2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
 - a. Self-drilling (Tek) type screws are not permitted.
 - 3. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
 - 4. Provide wall grip inserts for hollow wall construction.
 - 5. Fire-Resistance-Rated Applications: Comply with NFPA 80.
 - a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
 - b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.
 - 6. Concealed Fasteners: Do not use through or sex bolt type fasteners on door panel sides indicated as concealed fastener locations, unless otherwise indicated or required per manufacturer's testing requirements.

2.02 PERFORMANCE REQUIREMENTS

- A. Provide door hardware products that comply with the following requirements:
- 1. Applicable provisions of federal, state, and local codes.
 - a. ICC (IBC).
 - b. NFPA 101.

2. Accessibility: ADA Standards and ICC A117.1.
3. Fire-Resistance-Rated Doors: NFPA 80, listed and labeled by qualified testing agency for fire protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
4. Hardware on Fire-Resistance-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for application indicated.
5. Hardware for Smoke and Draft Control Doors: Provide door hardware that complies with local codes, and requirements of assemblies tested in accordance with UL 1784.
6. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
7. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
8. Products Requiring Electrical Connection: Listed and classified by testing firm acceptable to authorities having jurisdiction as suitable for the purpose specified.

2.03 HINGES

- A. Manufacturers: Conventional butt hinges.
 1. BEST; dormakaba Group: www.bestaccess.com/#sle.
 2. IVES; Allegion.
 3. McKinney; ASSA ABLOY.
- B. Properties:
 1. Butt Hinges: As applicable to each item specified.
 - a. Standard Weight Hinges: Minimum of two (2) permanently lubricated non-detachable bearings.
 - b. Heavy Weight Hinges: Minimum of four (4) permanently lubricated bearings on heavy weight hinges.
 - c. Template screw hole locations.
 - d. Bearing assembly installed after plating.
 - e. Bearings: Concealed fully hardened bearings.
 - f. Bearing Shells: Shapes consistent with barrels.
 - g. Pins: Easily seated, non-rising pins.
 - 1) Fully plate hinge pins.
 - 2) Non-Removable Pins: Slotted stainless-steel screws.
 - h. UL 10C listed for fire-resistance-rated doors.
 - i. Electrified Hardware Functions: Use hinges similar to conventional hinges used at the door leaf and designed to facilitate power transfer.
 - 1) Wiring: Concealed PTFE-jacketed wires, secured at each leaf and continuous through hinge knuckle. Provide wire quantity and sizes required for electric hardware be served and length sufficient for connection from locking hardware to power supply or junction box.
 - 2) Connectors: Use Molex type.
- C. Sizes: See Door Hardware Schedule.
 1. Hinge Widths: As required to clear surrounding trim.
 2. Sufficient size to allow 180-degree swing of door.
- D. Finishes: See Door Hardware Schedule.
 1. Fully polish hinges, front, back, and barrel.
- E. Grades:
 1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
 2. Comply with BHMA A156.18 Materials and Finishes.
 3. Comply with BHMA A156.1 Salt Spray Test.
 4. Comply with UL 294 Corrosion Test Outside Moist Hydrogen sulfide (H₂) air mixture.
- F. Material: Base metal as indicated for each item by BHMA material and finish designation.
- G. Types:
 1. Butt Hinges: Include full mortise hinges.
- H. Options: As applicable to each item specified.
 1. Provide electric power transfer (EPT) as listed in hardware sets.
 2. Provide concealed electric (CE) as listed in the hardware sets.

I. Quantities:

1. Butt Hinges: Three (3) hinges per leaves up to 90 inches (2286 mm) in height. Add one (1) for each additional 30 inches (762 mm) in height or fraction thereof.
 - a. Hinge weight and size unless otherwise indicated in hardware sets:
 - 1) For doors up to 36 inches (914 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.134 inch (3.4 mm) and a minimum of 4-1/2 inches (114 mm) in height.
 - 2) For doors from 36 inches (914 mm) wide up to 42 inches (1067 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.145 inch (3.7 mm) and a minimum of 4-1/2 inches (114 mm) in height.
 - 3) For doors from 42 inches (1067 mm) wide up to 48 inches (1219 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.180 inch (4.6 mm) and a minimum of 5 inches (127 mm) in height.
 - 4) For doors greater than 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.180 inch (4.6 mm) and a minimum of 5 inches (127 mm) in height.

J. Applications: At swinging doors.

1. Provide non-removable pins at out-swinging doors with locking hardware and all exterior doors.

K. Products:

1. Butt Hinges:
 - a. Concealed bearing, five (5) knuckles.

2.04 BOLTS

A. Manufacturers:

1. Trimco: www.trimcohardware.com/#sle.
2. IVES.
3. DCI.

B. Properties:

1. Flush Bolts:
 - a. Pairs of Swing Doors: At inactive leaves, provide flush bolts of type as required to comply with code.
 - b. Automatic Flush Bolts: Automatically latching upon closing of door leaf.
 - 1) Bolt Throw: 3/4 inch (19 mm), minimum.
 - c. Self-Latching Flush Bolts: Automatically latching upon closing of door; manually retracted; located on inactive leaf of pair.
 - 1) Bolt Throw: 3/4 inch (19 mm), minimum.
2. Dustproof Strikes: For bolting into floor, provide except at metal thresholds.

C. Products:

1. Automatic flush bolts.

2.05 EXIT DEVICES

A. Manufacturers:

1. BEST, dormakaba Group: www.bestaccess.com/#sle.
2. Von Duprin, Allegion.
3. Detex

B. Properties:

1. Actuation: Full-length touchpad.
2. Chassis:
 - a. Construction: Investment heavy-duty cast steel, zinc dichromate plated.
 - b. Compatibility: Standard Stile doors.
3. Touchpads: "T" style metal touchpads and rail assemblies with matching chassis covers end caps.
4. Latch Bolts: Stainless steel deadlocking with 3/4-inch (19 mm) projection using latch bolt.
5. Lever Design: Match project standard lockset trims.
6. Cylinder: Include where cylinder dogging or locking trim is indicated.

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7. Strike as recommended by manufacturer for application indicated.
 8. Sound dampening on touch bar.
 9. Dogging:
 - a. Non-Fire-Resistance-Rated Devices: Cylinder 1/4-inch (6 mm) dogging.
 - b. Fire-Resistance-Rated Devices: Manual dogging not permitted.
 10. Touch bar assembly on wide style exit devices to have a 1/4-inch (6.3 mm) clearance to allow for vision frames.
 11. All exposed exit device components to be of architectural metals and “true” architectural finishes.
 12. Handing: Field-reversible.
 13. Fasteners on Back Side of Device Channel: Concealed - exposed fasteners not allowed.
 14. Vertical Latch Assemblies' Operation: Gravity, without use of springs.
- C. Grades: Complying with BHMA A156.3, Grade 1.
1. Provide exit devices tested and certified by UL or by a recognized independent laboratory for mechanical operational testing to 10 million cycles minimum with inspection confirming Grade 1 Loaded Forces have been maintained.
- D. Performance Requirements:
1. Exterior Door Exit Devices in Hurricane-Strength Wind Areas:
 - a. Devices included in Miami (APD) (Miami-Dade County Approved Products Directory).
 - b. Complying with FLA (FBC-B) (Florida Building Code).
- E. Standards Compliance:
1. UL Listed for Panic and Fire for Class II Circuitry.
 2. Provide UL (DIR) listed exit device assemblies for fire-resistance-rated doors.
 3. Comply with UL 10C.
- F. Code Compliance: As required by authorities having jurisdiction in the State in which the Project is located.
- G. Options:
1. Electrified Devices:
 2. Internally mounted switch used to signal other components.
 3. MLR: Motorized latch retraction.
 4. Vandal-Resistant Trim: Heavy-duty lever trim with heavy-duty investment-cast stainless steel components and extra strength shock absorbing overload springs.
 - a. Not requiring resetting.
 - b. Lever design to match locksets and latchsets.
 5. Electrified Device Voltage: 24 VDC.
 6. Provide units meeting requirements of MIL-STD-810F, Method 506.4, Driving Rain Test and Method 509.4, Salt Fog Test.

2.06 LOCK CYLINDERS

- A. Manufacturers:
1. BEST, dormakaba Group: www.bestaccess.com/#sle.
- B. Properties:
- C. Grades:
1. Standard Security Cylinders: Comply with BHMA A156.5.
 2. High Security Cylinders: Comply with BHMA A156.30 or UL 437.
- D. Material:
1. Manufacturer's standard corrosion-resistant brass alloy.
- E. Types: As applicable to each item specified.
1. Standard security small format interchangeable core (SFIC) type cylinders, with seven-pin, 1C - 7-pin cores.
 2. High security type cylinders with seven-pin cores.
 3. Access control cylinder cores.

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- F. Applications: At locations indicated in hardware sets, and as follows
 - 1. As required for items with locking devices provided by other sections, including at elevator controls and cabinets.
 - a. When provisions for lock cylinders are referenced elsewhere in the Project Manual to this Section, provide compatible type of lock cylinder, keyed to building keying system, unless otherwise indicated.

2.07 MORTISE LOCKS

- A. Manufacturers:
 - 1. BEST, dormakaba Group: www.bestaccess.com/#sle.
- B. Properties:
 - 1. Mechanical Locks: Manufacturer's standard.
 - a. Fitting modified ANSI A115.1 door preparation.
 - b. Door Thickness Coordination Fitting 1-3/4 inch (44 mm) to 2-1/4 inch (57 mm) thick doors.
 - c. Latch: Solid, one-piece, anti-friction, self-lubricating stainless steel.
 - 1) Latchbolt Throw: 3/4 inch (19 mm), minimum.
 - d. Auxiliary Deadlatch: One-piece stainless steel, permanently lubricated.
 - e. Backset: 2-3/4 inch (70 mm).
 - f. Lever Trim:
 - 1) Functionality: Allow the lever handle to move up to 45 degrees from horizontal position prior to engaging the latchbolt assembly.
 - 2) Strength: Locksets outside locked lever designed to withstand minimum 1,400 inch-lbs (158.2 Nm) of torque. In excess of that, a replaceable part will shear. Key from outside and/or inside lever will still operate lockset.
 - 3) Spindle: Designed to prevent forced entry from attacking of lever.
 - 4) Independent spring mechanism for each lever.
 - (a) Trim to be self-aligning and thru-bolted.
 - 5) Handles: Made of forged or cast brass, bronze, or stainless-steel construction. Levers that contain a hollow cavity are not acceptable.
 - 6) Levers to operate a roller bearing spindle hub mechanism.
 - 7) Tactile Lever Handles: Machine grooves into the back of the hand grasp portion of the lever.
 - 2. Electrified Locks: Same properties as standard locks, and as follows:
 - a. Voltage: 24 VDC.
 - b. Function: Electrically locked (Fail Safe) or unlocked (Fail Secure), as indicated for each lock in Door Hardware Schedule.
 - c. Internal request-to-exit feature.
- C. Finishes: See Door Hardware Schedule.
 - 1. Core Faces: Match finish of lockset.
- D. Grades:
- E. Options:
 - 1. Provide locksets made in a manufacturing facility to compliant with ISO 9001-Quality Management and ISO 14001-Environmental Management.
 - 2. Temperature Control Module (TCM) at W-Series locks.
 - 3. Regulatory Compliance: As required by authorities having jurisdiction the State in which the Project is located.
- F. Products: Mortise locks, including standard and electrified types.
 - 1. 40H.

2.08 DOOR PULLS AND PUSH PLATES

- A. Manufacturers:
 - 1. Trimco: www.trimcohardware.com/#sle.
 - 2. Rockwood; ASSA ABLOY.
 - 3. Ives; ALLEGION.

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- B. Properties:
 - 1. Pull Type: Straight, unless otherwise indicated.
 - 2. Push Plate Type: Flat, with square corners, unless otherwise indicated.
 - a. Edges: Beveled, unless otherwise indicated.
- C. Grades: Comply with BHMA A156.6.
- D. Material: Stainless steel, unless otherwise indicated.
- E. Products:

2.09 CLOSERS

- A. Manufacturers:
 - 1. dormakaba; dormakaba Group: www.dormakaba.com/us-en/#sle.
 - 2. Norton, ASSA ABLOY.
- B. Properties:
 - 1. Surface Mounted Closers: Manufacturer's standard.
 - a. Construction: R14 high silicon aluminum alloy.
 - b. Mechanism: Separate tamper-resistant adjusting valves for closing and latching speeds.
 - c. Hydraulic Fluid: All-weather type.
 - d. Arm Assembly: Standard for product specified.
 - 1) Include hold-open, integral stop, or spring-loaded stop feature, as specified in Door Hardware Schedule.
 - 2) Parallel arm to be a heavy-duty rigid arm.
 - 3) Where "IS" or "S-IS" arms are specified in hardware sets, if manufacturer does not offer this arm provide a regular arm mount closer in conjunction with a heavy-duty overhead stop equal to a dormakaba 900 Series.
 - e. Covers:
 - 1) Type: Standard for product selected.
 - (a) Full.
 - 2) Material: Plastic.
 - 3) Finish: Painted.
- C. Grades:
 - 1. Closers: Comply with BHMA A156.4, Grade 1.
 - a. Underwriters Laboratories Compliance:
 - 1) Product Listing: UL (DIR) and ULC for use on fire-resistance-rated doors.
 - (a) UL 228 - Door Closers-Holders, With or Without Integral Smoke Detectors.
- D. Code Compliance: As required by authorities having jurisdiction in the State in which the Project is located.
- E. Types:
 - 1. Rack-and-pinion, surface-mounted. 1-1/2 inches (38 mm) minimum bore.
 - 2. Cam-and-roller, surface-mounted, adjustable spring power.
- F. Options:
 - 1. Delayed action, adjustable with an independent valve.
- G. Installation:
 - 1. Mounting: Includes surface mounted installations.
 - 2. Mount closers on non-public side of door and stair side of stair doors unless otherwise noted in hardware sets.
 - 3. At outswinging exterior doors, mount closer on interior side of door.
 - 4. Provide adapter plates, shim spacers, and blade stop spacers as required by frame and door conditions.
 - 5. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.
- H. Products:
 - 1. Surface Mounted:

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- a. TS93.
- b. 8900.

2.10 OVERHEAD STOPS AND HOLDERS

- A. Manufacturers:
 - 1. dormakaba; dormakaba Group: www.dormakaba.com/us-en/#sle.
 - 2. Architectural Builders Hardware Mfg. (ABH): www.abhmfg.com/#sle.
 - 3. Rixson, ASSA ABLOY.
- B. Properties:
 - 1. Stop Settings: At 90 degrees opening.
- C. Sizes: Manufacturer’s standard for the application.
- D. Finishes:
 - 1. Arms and Brackets: Zinc-plated.
- E. Grades: As applicable to item specified.
 - 1. Comply with BHMA A156.8, Grade 1.
- F. Material: Base metal as indicated for each item by BHMA material and finish designation.
 - 1. Track Channel: Extruded aluminum alloy.
 - 2. Slide Block: Machined from solid brass alloy.
- G. Types:
 - 1. Concealed.
- H. Products:
 - 1. Concealed Overhead Stops and Holders:
 - a. 910 Heavy Duty.

2.11 PROTECTION PLATES

- A. Manufacturers:
 - 1. Trimco, www.trimcohardware.com/#sle.
 - 2. Rockwood, ASSA ABLOY.
 - 3. IVES, Allegion.
- B. Properties:
 - 1. Plates:
 - a. Kick Plates: Provide along bottom edge of push side of every wood door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
 - b. Mop Plates: Provide along bottom edge of push side of doors to provide protection from cleaning liquids and equipment damage to door surface.
 - c. Edges: Beveled, on four (4) unless otherwise indicated.
- C. Grades: Comply with BHMA A156.6.
- D. Material: As indicated for each item by BHMA material and finish designation.
 - 1. Metal Properties: Brass or Stainless Steel as specified in Hardware Set.
 - a. Metal, Standard Duty: Thickness 0.050 inch (1.27 mm), minimum.
- E. Installation:
 - 1. Fasteners: Countersunk screw fasteners

2.12 STOPS AND HOLDERS

- A. Manufacturers:
 - 1. Trimco: www.trimcohardware.com/#sle.
 - 2. ABH.
 - 3. Rixson, ASSA ABLOY.
- B. General: Provide overhead stop/holder when wall or floor stop is not feasible.
- C. Grades:

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1. Door Holders, Wall Bumpers, and Floor Stops: Comply with BHMA A156.16 and Resilient Material Retention Test as described in this standard.
- D. Material: Base metal as indicated for each item by BHMA material and finish designation.
- E. Types:
 1. Wall Bumpers: Bumper, concave, wall stop.
 2. Floor Stops: Provide with bumper floor stop.
- F. Installation:
 1. Non-Masonry Walls: Confirm adequate wall reinforcement has been installed to allow lasting installation of wall bumpers.
- G. Products:
 1. Wall Bumpers.
 2. Floor Stops.

2.13 THRESHOLDS

- A. Manufacturers:
 1. National Guard Products, Inc: www.ngpinc.com/#sle.
 2. Pemko, ASSA ABLOY.
 3. Zero, Allegion
- B. Properties:
 1. Threshold Surface: Fluted horizontal grooves across full width.
- C. Grades: Thresholds: Comply with BHMA A156.21.
- D. Material: Base metal as indicated for each item by BHMA material and finish designation.
 1. Threshold Assemblies: Aluminum.
- E. Types: As applicable to project conditions. Provide barrier-free type at every location where specified.
 1. Saddle Thresholds: Without thermal break.
 2. Bumper Seal Thresholds with Gasket: Use silicone gaskets.

2.14 WEATHERSTRIPPING AND GASKETING

- A. Manufacturers:
 1. National Guard Products, Inc: www.ngpinc.com/#sle.
 2. Pemko, ASSA ABLOY.
 3. Zero, Allegion.
- B. Properties:
 1. Weatherstripping Air Leakage Performance: Not exceeding 0.3 cfm/sq ft ([] l/sq m) of door opening at 0.3 inches of water pressure differential for single doors, and 0.5 cfm/sq ft ([] l/sq m) of door area at 0.3 inches of water pressure differential for double doors for gasketing other than smoke control, as tested according to ASTM E283/E283M; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
 2. Adhesive-Backed Perimeter Gasketing: Silicone gasket material applied to frame with self- adhesive.
 3. Rigid, Housed, Perimeter Gasketing: Sponge silicone gasket material held in place by aluminum housing; fastened to frame stop with screws.
 4. Door Sweeps: Nylon brush gasket material held in place by flat aluminum housing or flange; surface mounted to face of door with screws.
- C. Grades: Comply with BHMA A156.22.
- D. Products:
 1. Weatherstripping: See Door Hardware Schedule.
 2. Smoke Seals: See Door Hardware Schedule.
 3. Door Bottom Seals:
 - a. Door Sweeps: See Door Hardware Schedule.

2.15 MISCELLANEOUS ITEMS

A. Manufacturers:

1. Trimco: www.trimcohardware.com/#sle.
2. Rockwood, ASSA ABLOY.

B. Properties:

1. Coat Hooks: Provide on room side of door, screw fastened.
 - a. Material: Brass.
2. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
 - a. Single Door: Provide three on strike jamb of frame.
 - b. Pair of Doors: Provide two on head of frame, one for each door at latch side.
 - c. Material: Rubber, gray color.

C. Products:

1. Coat Hooks.
2. Silencers.

2.16 ELECTRIFIED HARDWARE

A. Manufacturers:

1. BEST, dormakaba Group: www.bestaccess.com/#sle.
2. Dorma; dormakaba Group: www.dormakaba.com/us-en/#sle.

B. Properties:

1. Door Position Switches: Recessed devices with magnetic contacts.
 - a. Power Requirement: 50mA Max, 100 VDC.
 - b. SPDT configuration.
2. Power Supply Units: Manufacturer's standard.
 - a. Regulatory Compliance:
 - 1) United States Compliance:
 - (a) UL listed for Class II Output.
 - (b) Comply with UL 294 Standards incorporating enhanced Access Control. communications capabilities.
 - b. Enclosures: Lockable NEMA Type 1, with hinged cover and knockouts.
 - c. Power: 24 VAC, 10 Amp; field selectable.
 - 1) Incoming Power Voltage: 120 VAC.
 - d. Emergency Release Terminals: Designed to release devices upon activation of fire alarm system.
 - e. Auxiliary contacts for remote signaling.
 - f. User-selectable time delay from 0 to 4 minutes.
 - g. Fire Alarm System Interface: Standard.
 - 1) Fire alarm terminal with green LED indicating power is available.
 - h. Output Distribution Board with indicator LEDs.
 - i. Battery backup.
 - j. Battery-backup ready with no additional boards.
 - 1) Built-in dedicated charger.
 - 2) Battery load and charge test every 48 hours.
 - 3) Battery reversal protection.
 - 4) Red LED: Low-battery indication.
 - 5) Green LED: Power is available
 - k. On/Off LED power indicator.
 3. Power Transfers: Manufacturer's standard.
 - a. Mortised Type with Wires & Connectors:
 - 1) Listed by UL and ULC.
 - 2) Stainless steel housing and spring conduit.
 - 3) Wire Harness: Pre-installed, twelve wire, equipped with ten (10) 24-gauge wires and two 18 gauge wires.

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- 4) Accommodate 180-degree door swing.
- 5) Quick-Connect Plugs: Pre-installed.
- 4. Wire Harnesses: Of sufficient length, with quick connectors.
 - a. Wire Harness End Connection to Power Supply or Junction Box: One end with bare leads.

C. Products:

- 1. Door Position Switches:
 - a. 9540 Recessed Magnetic Contact/Door Position Switch.
- 2. Power Supplies:
 - a. RPSMLR2.
- 3. Power Transfers:
 - a. EPT-12C.
- 4. Wire Harnesses:
 - a. BEST wire harnesses.

2.17 KEYS AND CORES

A. Manufacturers:

- 1. BEST, dormakaba Group: www.bestaccess.com/#sle.

B. Properties: Complying with guidelines of BHMA A156.28.

- 1. Provide small format interchangeable core.
- 2. Provide Patented CORMAX keys and cores.
- 3. Provide keying information in compliance with DHI standards.
- 4. Keying Schedule: Arrange for a keying meeting, with Architect, Owner and hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct and keying complies with project requirements.
- 5. Keying: Master keyed.
- 6. Include construction keying and control keying with removable core cylinders.
- 7. Supply keys in following quantities:
 - a. Grand Master Keys: 1 each.
 - b. Master Keys: 4 each.
 - c. Construction Master Keys: 6 each.
 - d. Construction Keys: 15 each.
 - e. Construction Control Keys: 2 each.
 - f. Control Keys if New System: 2 each.
 - g. Extra Cylinder Cores: 2 each.
 - h. Change Keys: 2 each for each keyed core.
- 8. Provide key collection envelopes, receipt cards, and index cards in quantity suitable to manage number of keys.
- 9. Deliver keys with identifying tags to Owner by security shipment direct from manufacturer.
- 10. Permanent Keys and Cores: Stamped with applicable key marking for identification. Do not include actual key cuts within visual key control marks or codes.
- 11. Include installation of permanent cores and return construction cores to hardware supplier. Construction cores and keys to remain property of hardware supplier.

C. Products:

- 1. Patented:
 - a. CORMAX.

2.18 KEY CONTROL SYSTEMS

A. Manufacturers:

- 1. BEST, dormakaba Group: www.bestaccess.com/#sle.

B. Properties: Manufacturer's scalable system for keeping track of keys, users, and doors.

- 1. Key Management System: For each keyed lock on project, provide one set of consecutively numbered duplicate key tags with hanging hole and snap catch.

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2. Password Policy for Logins: Configurable.
3. User Interface: Tile icons and customizable dashboard.
4. Importing and Appending Data: At any time.
5. User Directory Synchronization: Active, reducing manual entry.
6. Email Notifications: Configurable for keys and other items currently due back on a designated day, notifications when keys and items are issued, and notifications when keys and other items are returned.
7. Global Search Functionality: Capable of listing cores and their location, building, and doors.
8. Relational Database: Allowing cross-referencing of people to cores and keys, doors, and buildings they access.
9. Reports: Customizable.
10. Self-service Password retrieval functionality.
11. Program Installation: Standalone.
12. Software Access: Allowing authorized users secure access to the software from anywhere, provided user can access their organization's secure network.
13. Minimum Installation Requirements: As indicated in manufacturer's written installation instructions.

C. Products:

1. Keystone Web.

2.19 KEY CABINETS

A. Manufacturers:

1. Lund Equipment Company, Inc: www.lundkey.com/#sle.
2. Telkee: www.telkee.com/#sle.

B. Properties:

1. Key Management System: For each keyed lock on project, provide one set of consecutively numbered duplicate key tags with hanging hole and snap catch.
2. Security Key Tags: For each keyed lock on project, provide one set of matching key tags for permanent attachment to one key of each set.
3. Provide key collection envelopes, receipt cards, and index cards in quantity suitable to manage number of keys.
4. Mounting: Wall surface mounted.
5. Capacity: Actual quantity of keys, plus 25 percent additional capacity.
6. Key cabinet lock to facility's keying system.

C. Finishes: Baked enamel, manufacturer's standard color.

D. Material: Sheet steel.

E. Products:

1. Lund: .
2. Telkee: .

2.20 FIRE DEPARTMENT LOCK-BOXES

A. Manufacturers:

1. Knox Company; Knox-Box Rapid Entry System: www.knoxbox.com/#sle.

B. Properties:

1. Heavy-duty, recessed, solid steel box with hinged door and interior gasket seal; single drill-resistant lock with dust covers and tamper alarm.
2. Capacity: Holds 10 keys.
3. Construction complying with UL 1037, UL 1610, and UL 437.

C. Finishes: Manufacturer's standard coating.

1. Color: Manufacturer's standard dark bronze.

2.21 FINISHES

- A. Finishes: Provide door hardware of same finish, unless otherwise indicated.

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1. Finish: 626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent 26D), 630; satin stainless steel, with stainless steel 3000 series base material (former US equivalent 32D), 652; satin chromium plated over nickel, with steel base material (former US equivalent 26D), 689; aluminum painted, with any base material (former US equivalent US28), and 695;; BHMA A156.18.

B. Exceptions:

1. Where base material metal is specified to be different, provide finish that is an equivalent appearance in accordance with BHMA A156.18.
2. Hinges for Fire-Rated Doors: Steel base material with plated finish, in compliance with NFPA 80.
3. Door Closer Covers and Arms: Color as selected by Architect from manufacturer's standard colors unless otherwise indicated.
4. Aluminum Surface Trim and Gasket Housings: Anodized to match door panel finish, not other hardware, unless otherwise indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.
- B. Correct all defects prior to proceeding with installation.
- C. Verify that electric power is available to power operated devices and of correct characteristics.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Install hardware using the manufacturer's fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use "Riv-Nuts" or similar products.
- C. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.
- D. Install hardware for smoke and draft control doors in accordance with NFPA 105.
- E. Use templates provided by hardware item manufacturer.
- F. Do not install surface mounted items until application of finishes to substrate are fully completed.
- G. Wash down masonry walls and complete painting or staining of doors and frames.
- H. Complete finish flooring prior to installation of thresholds.
- I. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list, unless noted otherwise in Door Hardware Schedule or on drawings.
 1. For Steel Doors and Frames: Install in compliance with SDI recommendations.
 2. For Aluminum-Framed Storefront Doors and Frames: See Section 084313.
 3. Flush Wood Doors: See Section 081416.
 4. Stile and Rail Wood Doors: See Section 081433.
 5. Mounting heights in compliance with ADA Standards:
 - a. Locksets: 40-5/16 inch (1024 mm).
 - b. Push Plates/Pull Bars: 42 inch (1067 mm).
 - c. Exit Devices: 40-5/16 inch (1024 mm).
- J. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal, anchor thresholds with stainless steel countersunk screws.

3.03 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Section 014000 - Quality Requirements.
- B. Provide an Architectural Hardware Consultant (AHC) to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUSTING

- A. Adjust work under provisions of Section 017000 - Execution and Closeout Requirements.

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- B. Adjust hardware for smooth operation.
- C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.05 CLEANING

- A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
- B. Clean adjacent surfaces soiled by hardware installation activities.
- C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.06 PROTECTION

- A. Protect finished Work under provisions of Section 017000 - Execution and Closeout Requirements.
- B. Do not permit adjacent work to damage hardware or finish.

3.07 HARDWARE SETS

Manufacturer List

Code	Name
BE	Best Access Systems
BY	By Related Section
DM	Dorma Door Controls
NA	National Guard
PR	BEST Precision Exit Devices
ST	BEST Hinges and Sliding
TR	Trimco

Option List

Code	Description
1/4-20 SSMS/EA	STAINLESS MACHINE SCREWS/EXPANSION ANC.
24V	24V Solenoid (Std)
7/8"LTC	7/8" Lip-To-Center Strike
B4E-HEAVY-KP	BEVELED 4 EDGES - KICK PLATES
C	QUICK CONNECT WIRING OPTION
CSK	COUNTER SINKING OF KICK and MOP PLATES
FSE	Fail Secure
HC	Hurricane Code Device
KNR	Knurled Knob/Lever
LD	Less Dogging
RQE	REQUEST TO EXIT
TAC/O	TACTILE LEVERS - OUTSIDE
TS	TOUCHBAR MONITORING SWITCH
VIN	Visual Indicator

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Finish List

Code	Description
26D	Satin Chrome
626	Satin Chromium Plated
626E	Satin Chrome
630	Satin Stainless Steel
630W	Stainless Steel, Weatherized
689	Aluminum Painted
AL	Aluminum
GREY	Grey

Hardware Sets

Set #01 - ACS EXTER ALUM

Doors: 100, 117C, 144A, 166A, 166B

1	Rim Cylinder	12E-72 PATD	626	BE
	NOTE: Coordinate with hardware provided			
1	Card Reader	BY ACCESS CONTROL INTEGRATOR		BY
1	All Other Hardware	BY DOOR MANUFACTURER		BY

NOTE: COORDINATION WITH ELECTRICAL AND SECURITY REQUIRED.

SAMPLE OPERATION DESCRIPTION: Door normally closed, latched and secure. Momentary access by presenting valid credential to reader or by mechanical key override. With loss of power door will remain locked on outside. Immediate free egress always.

Set #01a - ACS EXTER ALUM

1	Rim Cylinder	12E-72 PATD	626	BE
	NOTE: Coordinate with hardware provided			
1	Card Reader	BY ACCESS CONTROL INTEGRATOR		BY
1	All Other Hardware	BY DOOR MANUFACTURER		BY
1	Overhead Operator	REFER TO SPECIFICATIONS		BY

NOTE: COORDINATION WITH ELECTRICAL AND SECURITY REQUIRED.

SAMPLE OPERATION DESCRIPTION: Door normally closed, latched and secure. Momentary access by presenting valid credential to reader or by mechanical key override. With loss of power door will remain locked on outside. Immediate free egress always.

Set #02 - ACS EXTER EXIT

Doors: 100B, 143A, 147, 147A, 163H, 174A, 177

3	Hinges	CB199 4.5" x 4.5" NRP	630W	ST
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1	Power Transfer	EPT-12C		PR
1	Exit Device	C HC TS E2103 X V4908D FSE LD	630	PR
1	Rim Cylinder	12E-72 PATD	626	BE
1	Closer	TS9315 SPT	689	DM
1	Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1	Floor Stop	1201	626	TR
1	Weatherstrip	700 SA 1 x 36" 2 x 84"		NA
1	Door Sweep	C699A 36"		NA
1	Threshold	896 S 36" 1/4-20 SSMS/EA	AL	NA
1	Door Position Switch	MC4		DM
1	Card Reader	BY ACCESS CONTROL INTEGRATOR		BY
1	Power Supply	BY ACCESS CONTROL INTEGRATOR		BY

NOTE: COORDINATION WITH ELECTRICAL AND SECURITY REQUIRED.

SAMPLE OPERATION DESCRIPTION: Door normally closed, latched and secure. Momentary access by presenting valid credential to reader or by mechanical key override. With loss of power door will remain locked on outside. Immediate free egress always.

Set #02a - ACS EXTER EXIT

3	Hinges	CB199 4.5" x 4.5" NRP	630W	ST
1	Power Transfer	EPT-12C		PR
1	Exit Device	C HC TS E2103 X V4908D FSE LD	630	PR
1	Rim Cylinder	12E-72 PATD	626	BE
1	Closer	TS9315 SPT	689	DM
1	Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1	Floor Stop	1201	626	TR
1	Weatherstrip	700 SA 1 x 36" 2 x 84"		NA
1	Door Sweep	C699A 36"		NA
1	Threshold	896 S 36" 1/4-20 SSMS/EA	AL	NA
1	Door Position Switch	MC4		DM
1	Card Reader	BY ACCESS CONTROL INTEGRATOR		BY
1	Power Supply	BY ACCESS CONTROL INTEGRATOR		BY
1	Auto Operator	REFER TO SPECIFICATIONS		BY

NOTE: COORDINATION WITH ELECTRICAL AND SECURITY REQUIRED.

SAMPLE OPERATION DESCRIPTION: Door normally closed, latched and secure. Momentary access by presenting valid credential to reader or by mechanical key override. With loss of power door will remain locked on outside. Immediate free egress always.

Set #03 - ACS EXTER EXIT ELEC

Doors: 111, 119A, 119B, 180

3	Hinges	CB199 4.5" x 4.5" NRP	630W	ST
1	Power Transfer	EPT-12C		PR
1	Exit Device	C HC TS E2103 X V4908D FSE KNR LD	630	PR
1	Rim Cylinder	12E-72 PATD	626	BE

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1	Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1	Floor Stop	1201	626	TR
1	Weatherstrip	700 SA 1 x 36" 2 x 84"		NA
1	Door Sweep	C699A 36"		NA
1	Threshold	896 S 36" 1/4-20 SSMS/EA	AL	NA
1	Door Position Switch	MC4		DM
1	Card Reader	BY ACCESS CONTROL INTEGRATOR		BY
1	Power Supply	BY ACCESS CONTROL INTEGRATOR		BY

NOTE: COORDINATION WITH ELECTRICAL AND SECURITY REQUIRED.

SAMPLE OPERATION DESCRIPTION: Door normally closed, latched and secure. Momentary access by presenting valid credential to reader or by mechanical key override. With loss of power door will remain locked on outside. Immediate free egress always.

Set #05 - ACS EXTER LOCK O/S

Doors: 116, 173, 176

3	Hinges	CB199 4.5" x 4.5" NRP	630W	ST
1	Power Transfer	EPT-12C		PR
1	Electromechanical Lock	45HW-7DEU14H PATD 24V RQE	626	BE
1	Closer w/ Stop	8916 S-DS	689	DM
1	Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1	Floor Stop	1201	626	TR
1	Door Sweep	C699A 36"		NA
1	Threshold	896 S 36" 1/4-20 SSMS/EA	AL	NA
1	Door Position Switch	MC4		DM
1	Card Reader	BY ACCESS CONTROL INTEGRATOR		BY
1	Power Supply	BY ACCESS CONTROL INTEGRATOR		BY

NOTE: COORDINATION WITH ELECTRICAL AND SECURITY REQUIRED.

SAMPLE OPERATION DESCRIPTION: Door normally closed, latched and secure. Momentary access by presenting valid credential to reader or by mechanical key override. With loss of power door will remain locked on outside. Immediate free egress always.

Set #06 - ACS EXTER PR LK MECH O/S

Doors: 115

6	Hinges	CB199 4.5" x 4.5" NRP	630W	ST
1	Power Transfer	EPT-12C		PR
1	Semi-Auto Flushbolt	3820 X 3810	630	TR
1	Dust Proof Strike	3911	630	TR
1	Electromechanical Lock	45HW-7DEU14H PATD 24V 7/8"LTC RQE TAC/O	626	BE
1	Closer w/ Stop	8916 S-DS	689	DM
2	Kick Plate	K0050 8" x 35" B4E-HEAVY-KP CSK	630	TR
2	Floor Stop	1201	626	TR
1	Gasketing	5050 CL-20 20'		NA
1	Astragal	BY DOOR MANUFACTURER		BY
2	Door Sweep	C699A 36"		NA

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1	Saddle Threshold	425 72" 1/4-20 SSMS/EA	AL	NA
2	Door Position Switch	MC4		DM
1	Card Reader	BY ACCESS CONTROL INTEGRATOR		BY
1	Power Supply	BY ACCESS CONTROL INTEGRATOR		BY

NOTE: COORDINATION WITH ELECTRICAL AND SECURITY REQUIRED.

SAMPLE OPERATION DESCRIPTION: Door normally closed, latched and secure. Momentary access by presenting valid credential to reader or by mechanical key override. With loss of power door will remain locked on outside. Immediate free egress always.

Set #07 - ACS LOCK O/S

Doors: 169

2	Hinges	CB168 4.5" x 4.5" NRP	26D	ST
1	Elec. Hinge	CECB168-18 4.5" x 4.5"	26D	ST
1	Electromechanical Lock	45HW-7DEU14H PATD 24V RQE	626	BE
1	Closer w/ Stop	8916 S-DS	689	DM
1	Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1	Gasketing	5050 CL-17 17'		NA
1	Brush Sweep	600 A 36"		NA
1	Door Position Switch	MC4		DM
1	Card Reader	BY ACCESS CONTROL INTEGRATOR		BY
1	Power Supply	BY ACCESS CONTROL INTEGRATOR		BY

NOTE: COORDINATION WITH ELECTRICAL AND SECURITY REQUIRED.

SAMPLE OPERATION DESCRIPTION: Door normally closed, latched and secure. Momentary access by presenting valid credential to reader or by mechanical key override. With loss of power door will remain locked on outside. Immediate free egress always.

Set #08 - ACS LOBBY LOCK O/S

Doors: 100A

2	Hinges	CB168 4.5" x 4.5" NRP	26D	ST
1	Elec. Hinge	CECB168-18 4.5" x 4.5"	26D	ST
1	Electromechanical Lock	45HW-7DEU14H PATD 24V RQE	626	BE
1	Closer	TS9315 PT	689	DM
1	Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1	Dome Stop	1211	626	TR
3	Silencers	1229A	GREY	TR
1	Door Position Switch	MC4		DM
1	Card Reader	BY ACCESS CONTROL INTEGRATOR		BY
1	Power Supply	BY ACCESS CONTROL INTEGRATOR		BY

NOTE: COORDINATION WITH ELECTRICAL AND SECURITY REQUIRED.

SAMPLE OPERATION DESCRIPTION: Door normally closed, latched and secure. Momentary access by presenting valid credential to reader or by mechanical key override. With loss of power door will remain locked on outside. Immediate free egress always.

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Set #09 - ACS PR LOCK O/S

Doors: 170

6	Hinges	CB168 4.5" x 4.5" NRP	26D	ST
1	Power Transfer	EPT-12C		PR
1	Semi-Auto Flushbolt	3820 X 3810	630	TR
1	Dust Proof Strike	3910	630	TR
1	Electromechanical Lock	45HW-7DEU14H PATD 24V RQE	626	BE
1	Closer w/ Stop	8916 S-DS	689	DM
2	Kick Plate	K0050 8" x 35" B4E-HEAVY-KP CSK	630	TR
1	Gasketing	5050 CL-20 20'		NA
1	Astragal	BY DOOR MANUFACTURER		BY
2	Brush Sweep	600 A 36"		NA
2	Door Position Switch	MC4		DM
1	Card Reader	BY ACCESS CONTROL INTEGRATOR		BY
1	Power Supply	BY ACCESS CONTROL INTEGRATOR		BY

NOTE: COORDINATION WITH ELECTRICAL AND SECURITY REQUIRED.

SAMPLE OPERATION DESCRIPTION: Door normally closed, latched and secure. Momentary access by presenting valid credential to reader or by mechanical key override. With loss of power door will remain locked on outside. Immediate free egress always.

Set #10 - ACS VEST-MAIL LOCK I/S

Doors: 160B, 162B, 163B

3	Hinges	CB168 4.5" x 4.5"	26D	ST
1	Power Transfer	EPT-12C		PR
1	Electromechanical Lock	45HW-7DEU14H PATD 24V RQE	626	BE
1	Closer	TS9315 T	689	DM
1	Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1	Wall Bumper	1270CX	626	TR
1	Gasketing	5050 CL-17 17'		NA
1	Brush Sweep	600 A 36"		NA
1	Door Position Switch	MC4		DM
1	Card Reader	BY ACCESS CONTROL INTEGRATOR		BY
1	Power Supply	BY ACCESS CONTROL INTEGRATOR		BY

NOTE: COORDINATION WITH ELECTRICAL AND SECURITY REQUIRED.

SAMPLE OPERATION DESCRIPTION: Door normally closed, latched and secure. Momentary access by presenting valid credential to reader or by mechanical key override. With loss of power door will remain locked on outside. Immediate free egress always.

Set #11 - ACS OFFICE-IT LOCK I/S

Doors: 135, 156, 168, 171, 172

2	Hinges	CB179 4.5" x 4.5"	26D	ST
1	Elec. Hinge	CECB179-18 4.5" x 4.5"	26D	ST
1	Electromechanical Lock	45HW-7DEU14H PATD 24V RQE	626	BE

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1	Closer	TS9315 T	689	DM
1	Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1	Wall Bumper	1270CX	626	TR
1	Gasketing	5050 CL-17 17'		NA
1	Brush Sweep	600 A 36"		NA
1	Door Position Switch	MC4		DM
1	Card Reader	BY ACCESS CONTROL INTEGRATOR		BY
1	Power Supply	BY ACCESS CONTROL INTEGRATOR		BY

NOTE: COORDINATION WITH ELECTRICAL AND SECURITY REQUIRED.

SAMPLE OPERATION DESCRIPTION: Door normally closed, latched and secure. Momentary access by presenting valid credential to reader or by mechanical key override. With loss of power door will remain locked on outside. Immediate free egress always.

Set #13 - CONF CLASSROOM EXIT

Doors: 117A, 117B

3	Hinges	CB168 4.5" x 4.5" NRP	26D	ST
1	Exit Device	2108 X V4908D	630	PR
1	Rim Cylinder	12E-72 PATD	626	BE
1	Closer w/ H.O.	TS9315 PTH	689	DM
1	Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1	Wall Bumper	1270CX	626	TR
1	Gasketing	5050 CL-17 17'		NA

Set #14 - PASSAGE VESTIBULE-MAIL

Doors: 160A, 162A, 163A

3	Hinges	CB168 4.5" x 4.5"	26D	ST
1	Passage Set	45H-0N14H	626	BE
1	Closer	TS9315 T	689	DM
1	Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1	Wall Bumper	1270CX	626	TR
3	Silencers	1229A	GREY	TR

Set #15 - PASSAGE BREAK ROOM

Doors: 112A, 112B, 124, 144, 164A, 164B

3	Hinges	CB168 4.5" x 4.5"	26D	ST
1	Passage Set	45H-0N14H	626	BE
1	Closer w/ H.O.	TS9315 TH	689	DM
1	Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1	Wall Bumper	1270CX	626	TR
1	Gasketing	5050 CL-17 17'		NA

Set #16 - PR PASSAGE STORAGE I/S

Doors: 161

6	Hinges	CB168 4.5" x 4.5"	26D	ST
1	Passage Set	45H-0N14H 7/8"LTC	626	BE

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2	Overhead Stop	912 S	626E	DM
2	Silencers	1229A	GREY	TR

Set #17 - PASSAGE

Doors: 132, 133, 146

3	Hinges	CB179 4.5" x 4.5"	26D	ST
1	Passage Set	45H-0N14H	626	BE
1	Wall Bumper	1270CX	626	TR
3	Silencers	1229A	GREY	TR

Set #18 - PASSAGE PUSH-PULL RESTROOM

Doors: 137, 139, 158, 159

3	Hinges	CB199 4.5" x 4.5"	630W	ST
1	Push/Pull Plate	1894-4B	630	TR
1	Closer w/ H.O.	TS9315 TH	689	DM
1	Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1	Mop Plate	KM050 4" x 35" CSK	630	TR
1	Wall Bumper	1270CX	626	TR
3	Silencers	1229A	GREY	TR

Set #20 - OFFICE

Doors: 105, 106, 107, 108, 120, 121, 122, 123, 125, 126, 127, 128, 129, 130, 131, 140, 141, 142, 150, 151, 152, 153, 154, 155, 167

3	Hinges	CB179 4.5" x 4.5"	26D	ST
1	Office Lock	45H-7AB14H PATD	626	BE
1	Wall Bumper	1270CX	626	TR
3	Silencers	1229A	GREY	TR

Set #22 - CLASSROOM LOCK

Doors: 109, 110

3	Hinges	CB179 4.5" x 4.5"	26D	ST
1	Classroom Lock	45H-7R14H PATD	626	BE
1	Wall Bumper	1270CX	626	TR
3	Silencers	1229A	GREY	TR

Set #24 - STOREROOM

Doors: 103

3	Hinges	CB179 4.5" x 4.5"	26D	ST
1	Storeroom Lock	45H-7D14H PATD	626	BE
1	Wall Bumper	1270CX	626	TR
3	Silencers	1229A	GREY	TR

Set #25 - JANITOR

Doors: 136, 157

3	Hinges	CB199 4.5" x 4.5"	630W	ST
1	Storeroom Lock	45H-7D14H PATD	626	BE
1	Closer w/ H.O.	TS9315 TH	689	DM

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1	Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1	Mop Plate	KM050 4" x 35" CSK	630	TR
1	Wall Bumper	1270CX	626	TR
3	Silencers	1229A	GREY	TR

Set #26 - PRIVACY UNISEX

Doors: 102, 113, 114

3	Hinges	CB199 4.5" x 4.5"	630W	ST
1	Privacy Set	45H-0L14H VIN	626	BE
1	Closer w/ H.O.	TS9315 TH	689	DM
1	Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1	Mop Plate	KM050 4" x 35" CSK	630	TR
1	Wall Bumper	1270CX	626	TR
3	Silencers	1229A	GREY	TR

Set #27 - PRIVACY

Doors: 101, 145

3	Hinges	CB179 4.5" x 4.5"	26D	ST
1	Privacy Set	45H-0L14H	626	BE
1	Wall Bumper	1270CX	626	TR
3	Silencers	1229A	GREY	TR

END OF SECTION

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SECTION 08 91 00 - LOUVERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Louvers, frames, and accessories.

1.2 RELATED REQUIREMENTS

- A. Section 07 25 00 - Weather Barriers: Sealing frames to weather barrier installed on adjacent construction.
- B. Section 07 62 00 - Sheet Metal Flashing and Trim.
- C. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.
- D. Section 23 31 00 - HVAC Ducts and Casings: Ductwork attachment to louvers.

1.3 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2020.
- B. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.
- C. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating; 2012 (Reapproved 2015).
- D. AMCA 511 - Certified Ratings Program Product Rating Manual for Air Control Devices; 2021.
- E. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

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- B. Product Data: Provide data describing design characteristics, maximum recommended air velocity, design free area, materials and finishes.
- C. Shop Drawings: Indicate louver layout plan and elevations, opening and clearance dimensions, tolerances; head, jamb and sill details; blade configuration, screens, blankout areas required, and frames.
- D. Samples: Submit two samples 6 x 6 inches in size illustrating finish and color of exterior and interior surfaces.
- E. Test Reports: Independent agency reports showing compliance with specified performance criteria.
- F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with minimum three years of documented experience.
 - 1. Products shall carry Miami-Dade County Notice of Acceptance (NOA).
- B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

1.6 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide twenty year manufacturer warranty against distortion, metal degradation, and failure of connections.
 - 1. Finish: Include coverage against degradation of exterior finish.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Wall Louvers:
 - 1. Basis of Design:
 - a. Ruskin ACL645D.
 - 2. Other acceptable manufacturers:
 - a. Airline Louvers: www.airlinelouvers.com/#sle.
 - b. Airolite Company, LLC: www.airolite.com/#sle.

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3. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 LOUVERS

- A. Louvers: Factory fabricated and assembled, complete with frame, mullions, and accessories; AMCA Certified in accordance with AMCA 511.
1. Wind Load Resistance: Design to resist positive and negative wind load as required by code without damage or permanent deformation.
 2. Intake Louvers: Design to allow maximum of 0.01 oz/sq ft water penetration at calculated intake design velocity based on design air flow and actual free area, when tested in accordance with AMCA 500-L.
 3. Drainable Blades: Continuous rain stop at front or rear of blade aligned with vertical gutter recessed into both jambs of frame.
 4. Screens: Provide insect screens at intake louvers and bird screens at exhaust louvers.
- B. Acoustical Louvers: Horizontal blade, formed aluminum sheet construction.
1. Free Area: 27 percent, minimum.
 2. Blades: Straight, sloped at 45 degrees, with insulating material in cavity, lower surface covered with perforated sheet metal of same type as blades.
 3. Aluminum Thickness: Frame 16 gage, 0.063 inch minimum; blades 18 gage, 0.051 inch minimum.
 4. Aluminum Finish: Class I natural anodized; finish welded units after fabrication.

2.3 FINISHES

- A. Superior Performing Organic Coatings System: Polyvinylidene fluoride (PVDF) multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent PVDF resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch.
- B. Color: As selected from manufacturer's standard colors.

2.4 ACCESSORIES

- A. Screens: Frame of same material as louver, with mitered and welded corners; removable, screw attached; installed on inside face of louver frame.
- B. Bird Screen: Interwoven wire mesh of aluminum, 14 gage, 0.0641 inch diameter wire, 1/2 inch open weave, square design.
- C. Insect Screen: 18 x 16 size aluminum mesh.

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- D. Fasteners and Anchors: Stainless steel.
- E. Flashings: Of same material as louver frame, formed to required shape, single length in one piece per location.
- F. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that prepared openings and flashings are ready to receive work and opening dimensions are as indicated on shop drawings.
- B. Verify that field measurements are as indicated on shop drawings.

3.2 INSTALLATION

- A. Install louver assembly in accordance with manufacturer's instructions.
- B. Install louvers level and plumb.
- C. Set sill members and sill flashing in continuous bead of sealant.
- D. Install flashings and align louver assembly to ensure moisture shed from flashings and diversion of moisture to exterior.
- E. Secure louver frames in openings with concealed fasteners.
- F. Coordinate with installation of mechanical ductwork.

3.3 CLEANING

- A. Strip protective finish coverings.
- B. Clean surfaces and components.

END OF SECTION 08 91 00

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SECTION 09 21 16 - GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Performance criteria for gypsum board assemblies.
- B. Acoustic insulation.
- C. Gypsum sheathing.
- D. Cementitious backing board.
- E. Gypsum wallboard.
- F. Joint treatment and accessories.

1.2 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.
- C. Section 07 2100 - Thermal Insulation: Acoustic insulation.
- D. Section 07 25 00 - Weather Barriers: Water-resistive barrier over sheathing.
- E. Section 07 8400 - Firestopping: Top-of-wall assemblies at fire rated walls.
- F. Section 07 92 00 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.
- G. Section 09 2216 - Non-Structural Metal Framing.

1.3 REFERENCE STANDARDS

- A. ANSI A108/A118/A136.1 - Specifications for the Installation of Ceramic Tile; 2020.
- B. ANSI A108/A118/A136.1 - Specifications for the Installation of Ceramic Tile; 2020.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2022.

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- D. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).
- E. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2018.
- F. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.
- G. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.
- H. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2020.
- I. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2022.
- J. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.
- K. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.
- L. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.
- M. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel; 2018.
- N. ASTM C1280 - Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing; 2018.
- O. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2022.
- P. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
- Q. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels; 2019.
- R. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels; 2019, with Editorial Revision (2020).
- S. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

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- T. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.
- U. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
- V. ASTM E413 - Classification for Rating Sound Insulation; 2022.
- W. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).
- X. GA-216 - Application and Finishing of Gypsum Panel Products; 2021.
- Y. GA-226 - Application of Gypsum Board to Form Curved Surfaces; 2019.
- Z. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- AA. UL (FRD) - Fire Resistance Directory; Current Edition.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.
- C. Product Data: Provide data on gypsum board, accessories, and joint finishing system.
- D. Test Reports: For stud framing products that do not comply with ASTM C645 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing gypsum board application and finishing with minimum 10 years of documented experience.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
 - 1. See PART 3 for finishing requirements.

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- B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:
 - 1. Acoustic Attenuation: STC of 45-49 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
- C. Shaft Walls at HVAC Shafts: Provide completed assemblies with the following characteristics:
 - 1. Air Pressure Within Shaft: Sustained loads of 5 lbf/sq ft with maximum mid-span deflection of L/240.
 - 2. Acoustic Attenuation: STC of 35-39 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
- D. Shaft Walls at Elevator Shafts: Provide completed assemblies with the following characteristics:
 - 1. Air Pressure Within Shaft: Intermittent loads of 5 lbf/sq ft with maximum mid-span deflection of L/240.
 - 2. Acoustic Attenuation: STC of 35-39 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
- E. Fire Rated Assemblies: Provide completed assemblies complying with applicable code and as indicated on the Drawings
 - 1. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).

2.2 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
 - 1. American Gypsum Company: www.americangypsum.com/#sle.
 - 2. CertainTeed Corporation: www.certainteed.com/#sle.
 - 3. Continental Building Products: www.continental-bp.com/#sle.
 - 4. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
 - 5. National Gypsum Company: www.nationalgypsum.com/#sle.
 - 6. USG Corporation: www.usg.com/#sle.
 - 7. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 - 2. Thickness:
 - a. Vertical Surfaces: 5/8 inch.
 - b. Ceilings: 1/2 inch.
 - c. Curved partitions - 2 layers: 1/4 inch.

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d. Multi-Layer Assemblies: Thicknesses as indicated on drawings.

C. Backing Board For Wet Areas:

1. Application: Surfaces behind tile in wet areas including all restrooms.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9>ANSI A108/A118/A136.1 or ASTM C1325.
 - a. Thickness: 5/8 inch.
 - b. Products:
 - 1) Custom Building
Products: www.custombuildingproducts.com/#sle.
 - 2) National Gypsum Company; PermaBase Cement Board: www.nationalgypsum.com/#sle.
 - 3) USG Corporation: www.usg.com/#sle.
 - 4) Substitutions: See Section 01 60 00 - Product Requirements.

D. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.

1. Application: Vertical surfaces behind thinset tile, except in wet areas.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
4. Type: Regular and Type X, in locations indicated.
5. Type X Thickness: 5/8 inch.
6. Type C Thickness: 5/8 inch.
7. Regular Board Thickness: 5/8 inch.
8. Edges: Tapered.
9. Products:
 - a. American Gypsum Company; M-Bloc.
 - b. American Gypsum Company; M-Bloc Type X.
 - c. Georgia-Pacific Gypsum; ToughRock Mold-Guard Gypsum Board.
 - d. Georgia-Pacific Gypsum; DensArmor Plus.
 - e. National Gypsum Company; Gold Bond XP Gypsum Board.
 - f. Substitutions: See Section 01 60 00 - Product Requirements.

E. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.

1. Application: and bulkheads, unless otherwise indicated.

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2. Thickness: 1/2 inch.
3. Edges: Tapered.
4. Products:

- a. CertainTeed Corporation; Interior Ceiling Drywall: www.certainteed.com/#sle.
- b. Georgia-Pacific Gypsum; ToughRock Span 24 Ceiling Board.
- c. USG Corporation; 1/2 Inch Sheetrock Brand UltraLight Panels: www.usg.com/#sle.
- d. Substitutions: See Section 01 60 00 - Product Requirements.

F. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.

1. Application: Exterior sheathing, unless otherwise indicated.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. Fungal Resistance: No fungal growth when tested in accordance with ASTM G21.
4. Glass Mat Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C1177/C1177M.
5. Core Type: Type X, as indicated.
6. Type X Thickness: 5/8 inch.
7. Edges: Square.
8. Glass Mat Faced Products:
 - a. American Gypsum Company; M-Glass Exterior Sheathing Type X.
 - b. CertainTeed Corporation; GlasRoc Type X Exterior Sheathing.
 - c. Continental Building Products; Weather Defense Platinum Sheathing Type X.
 - d. Georgia-Pacific Gypsum; DensGlass Fireguard Sheathing.
 - e. National Gypsum Company; Gold Bond eXP Sheathing.
 - f. Substitutions: See Section 01 60 00 - Product Requirements.

G. Exterior Soffit Board: Exterior gypsum soffit board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.

1. Application: Exterior soffits, unless otherwise indicated.
2. Types: Type X, in locations indicated.
3. Type X Thickness: 5/8 inch.
4. Edges: Square.
5. Products:
 - a. American Gypsum Company; Exterior Soffit Gypsum Wallboard Type X.
 - b. Continental Building Products; Soffitboard Type X.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.

H. Shaftwall and Coreboard: Type X; 1 inch thick by 24 inches wide, beveled long edges, ends square cut.

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1. Glass Mat Faced Type: Glass mat shaftliner gypsum panel or glass mat coreboard gypsum panel as defined in ASTM C1658/C1658M.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. Products:
 - a. Continental Building Products; Weather Defense Platinum Shaftliner Type X.
 - b. Georgia-Pacific Gypsum; DensGlass Shaftliner (mold-resistant).
 - c. National Gypsum Company; Gold Bond Brand eXP Shaftliner.
 - d. National Gypsum Company; Gold Bond Fire-Shield Shaftliner XP.
 - e. Substitutions: See Section 01 60 00 - Product Requirements.

2.3 ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: 3-1/2 inch.
- B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
 1. Products:
 - a. Franklin International, Inc.; Titebond GREENchoice Professional Acoustical Smoke and Sound Sealant: www.titebond.com/#sle.
 - b. Liquid Nails, a brand of PPG Architectural Coatings; AS-825: www.liquidnails.com/#sle.
 - c. Specified Technologies Inc; Smoke N Sound Acoustical Sealant: www.stifirestop.com/#sle.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Water-Resistive Barrier: As specified in Section 07 25 00.
- D. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
 1. Types: As detailed or required for finished appearance.
 2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
 3. Products:
 - a. Same manufacturer as framing materials.
 - b. Phillips Manufacturing Co: www.phillipsmfg.com.
 - c. Trim-tex, Inc.: www.trim-tex.com/#sle.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.
- E. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
 1. Tape: 2 inch wide, coated glass fiber tape for joints and corners.

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2. Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
3. Ready-mixed vinyl-based joint compound.
4. Products:
 - a. Continental Building Products: www.continental-bp.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- F. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inch in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion resistant.
- G. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion resistant.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.2 SHAFT WALL INSTALLATION

- A. Shaft Wall Framing: Install in accordance with manufacturer's installation instructions.
 1. Fasten runners to structure with short leg to finished side, using appropriate power-driven fasteners at not more than 24 inches on center.
 2. Install studs at spacing required to meet performance requirements.
- B. Shaft Wall Liner: Cut panels to accurate dimension and install sequentially between special friction studs.
 1. On walls over sixteen feet high, screw-attach studs to runners top and bottom.
 2. Seal perimeter of shaft wall and penetrations with acoustical sealant.

3.3 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
 1. Place two beads continuously on substrate before installation of perimeter framing members.
 2. Place continuous bead at perimeter of each layer of gypsum board.

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3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

3.4 BOARD INSTALLATION

- A. Comply with ASTM C 840, GA-216, ASTM C 840, GA-216, ASTM C 840, and GA-216. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Double-Layer Non-Rated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Use glass mat faced gypsum board at exterior walls and at other locations as indicated. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.
- D. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- E. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.
- F. Exterior Sheathing: Comply with ASTM C1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.
 1. Seal joints, cut edges, and holes with water-resistant sealant.
- G. Exterior Soffits: Install exterior soffit board perpendicular to framing, with staggered end joints over framing members or other solid backing.
- H. Cementitious Backing Board: Install over steel framing members where indicated, in accordance with ANSI A108.11> ANSI A108/A118/A136.1 and manufacturer's instructions.
- I. Installation on Metal Framing: Use screws for attachment of gypsum board.
- J. Curved Surfaces: Apply gypsum board to curved substrates in accordance with GA-226.

3.5 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
 1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
 2. At exterior soffits, not more than 30 feet apart in both directions.

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- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.6 JOINT TREATMENT

- A. Paper Faced Gypsum Board: Use paper joint tape, bedded with ready-mixed vinyl-based joint compound and finished with ready-mixed vinyl-based joint compound.
- B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 - 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
 - 2. Level 3: Walls to receive textured wall finish.
 - 3. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
 - 4. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.
 - 5. Level 0: Temporary partitions.
- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
 - 2. Taping, filling and sanding is not required at base layer of double layer applications.
- D. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.7 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION 09 21 16

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SECTION 09 51 00 - ACOUSTICAL CEILINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

1.2 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 08 31 00 - Access Doors and Panels: Access panels.
- C. Section 21 13 00 - Fire-Suppression Sprinkler Systems: Sprinkler heads in ceiling system.
- D. Section 23 37 00 - Air Outlets and Inlets: Air diffusion devices in ceiling.
- E. Section 26 51 00 - Interior Lighting: Light fixtures in ceiling system.
- F. Section 28 46 00 - Fire Detection and Alarm: Fire alarm components in ceiling system.

1.3 REFERENCE STANDARDS

- A. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.
- B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2019.
- C. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2022.
- D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2022.
- E. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2019.

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- F. UL (FRD) - Fire Resistance Directory; Current Edition.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Do not install acoustical units until after interior wet work is dry.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on suspension system components.
- C. Samples: Submit two samples 6 by 6 inch in size illustrating material and finish of acoustical units.
- D. Samples: Submit two samples each, 12 inches long, of suspension system main runner.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

1.6 QUALITY ASSURANCE

- A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.7 FIELD CONDITIONS

- A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

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PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acoustic Panels:
1. Armstrong World Industries, Inc: www.armstrong.com.
 2. CertainTeed Corporation: www.certainteed.com/#sle.
 3. USG Corporation: www.usg.com/ceilings/#sle.
 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Suspension Systems:
1. Same as for acoustical units.
 2. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 ACOUSTICAL UNITS

- A. Acoustical Units - General: ASTM E1264, Class A.
1. VOC Content: As specified in Section 01 61 16.
- B. Acoustical Panels: Painted mineral fiber, ASTM E1264 Type III, with the following characteristics:
1. VOC Content: As specified in Section 01 61 16.
 2. VOC Content: Certified as Low Emission by one of the following :
 - a. Third party certified compliant with California Department of Public Health CDPH/EHLB/Standard Method Version 1.1, 2010.
 3. Sizes: As indicated on Drawings.
 4. Thickness: 3/4 inches.
 5. Composition: Wet felted.
 6. Light Reflectance: 90 percent, determined in accordance with ASTM E1264.
 7. Ceiling Attenuation Class (CAC): 35, determined in accordance with ASTM E1264.
 8. Edge: Square.
 9. Surface Color: White.
 10. Surface Pattern: As indicated by manufacturer designation..
 11. Suspension System: Exposed grid.

2.3 SUSPENSION SYSTEM(S)

- A. Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.

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- B. Exposed Steel Suspension System: Formed steel, commercial quality cold rolled; heavy-duty.
 - 1. Profile: Tee; 9/16 inch wide face.
 - 2. Construction: Double web.
 - 3. Finish: White painted.

2.4 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Perimeter Moldings: Same material and finish as grid.
 - 1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid, as indicated on Drawings.
- C. Acoustical Sealant For Perimeter Moldings: Non-hardening, non-skinning, for use in conjunction with suspended ceiling system.
- D. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

3.2 PREPARATION

- A. Install after major above-ceiling work is complete.
- B. Coordinate the location of hangers with other work.

3.3 INSTALLATION - SUSPENSION SYSTEM

- A. Install suspension system in accordance with ASTM E580/E580M, ASTM C636/C636M, ASTM C636/C636M, ASTM E580/E580M, ASTM C636/C636M, and ASTM E580/E580M and as supplemented in this section.
- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. Locate system on room axis according to reflected plan.

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- D. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - 1. Install in bed of acoustical sealant.
 - 2. Use longest practical lengths.
 - 3. Overlap and rivet corners.
- E. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- F. Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.
- G. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- H. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- I. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- J. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- K. Do not eccentrically load system or induce rotation of runners.
- L. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - 1. Install in bed of acoustical sealant.
 - 2. Use longest practical lengths.
 - 3. Overlap and rivet corners.
- M. Form expansion joints as detailed. Form to accommodate plus or minus 1 inch movement. Maintain visual closure.

3.4 INSTALLATION - ACOUSTICAL UNITS

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install units after above-ceiling work is complete.

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- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- F. Cutting Acoustical Units:
 - 1. Cut to fit irregular grid and perimeter edge trim.
 - 2. Make field cut edges of same profile as factory edges.
 - 3. Double cut and field paint exposed reveal edges.
- G. Where round obstructions occur, provide preformed closures to match perimeter molding.
- H. Install hold-down clips on panels within 20 ft of an exterior door.

3.5 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION 09 51 00

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SECTION 09 54 23.11 - EXTERIOR LINEAR METAL CEILING SYSTEM

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. Section Includes:
1. Perforated and non-perforated metal ceiling panels
 2. Suspension systems
 3. Accessories: provide other necessary items including devices for attachment overhead construction, secondary members, splines, splices, connecting clips, wall connectors, wall angles, and other devices required for a complete installation.
 4. Supplemental support framing: Provide fully engineered secondary framing as required to meet code, conforming to layout shown in drawings, to support direct-hung metal ceilings suspension system.
- B. Related Sections / Work:
1. Sections 09 22 16 – Non-Structural Metal Framing.
- C. This Section covers the general requirements only for metal ceilings as shown on the drawings. The supplying and installation of additional accessory features and other items not specifically mentioned herein, but which are necessary to make a complete installation, shall also be included.
- D. Qualification Data:
1. Test Reports: Certified reports from independent agency substantiating structural compliance to wind loads and other governing requirements.
 2. Certificates:
 - a. Data substantiating manufacturer and installer qualifications.
 - b. Certified data attesting fire rated materials comply with specifications.
 3. Manufacturer's Instructions: Detailed installation instructions and maintenance data.

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1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM)
1. E 84 – “Standard Test Method for Surface Burning Characteristics of Building Materials”
 2. E 488 – “Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements”
 3. B 209 – “Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate”
 4. C 423 – “Sound Absorption and Sound Absorption Coefficients by Reverberation Room Method”
 5. E 580 – “Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Moderate Seismic Restraint”
 6. C 635 – “Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings”
 7. C 636 – “Recommended Practice for Installation of Metal Ceiling Suspensions Systems for Acoustical and Lay-in Panels”
 8. A 641 – “Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire”
 9. A 653 – “Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip process”
 10. E 1264 – “Classification for Acoustical Ceiling Products”
 11. E 1477 – “Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by use of Integrating-Sphere Reflectometers”
 12. D 1044 – “Practice for Abrasion Resistance”
 13. D 1002 – “Practice for Adhesion Resistance”

1.4 SUBMITTALS

- A. Product Data: Manufacturer’s published literature, including specifications.
- B. Product Certification: Manufacturer’s certifications that products comply with specified requirements and governing codes including product data, laboratory test reports and research reports showing compliance with specified standards.
- C. Shop Drawings: Submit shop drawings for reflected ceiling plans (RCP’s), drawn to scale, and indicating penetrations and ceiling mounted items. Show the following details:
1. Reflected Ceiling Plan(s): Indicating metal ceiling layout, ceiling mounted items and penetrations.

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2. Suspension System, Carrier and Component Layout.
3. Details of system assembly and connections to building components.

D. Samples for Verification: Full-size units (or as specified below) of each type of ceiling assembly indicated; in sets for each color, texture, and pattern specified, showing the full range of variations expected in these characteristics. Submit samples for each type specified.

1. 11" square metal panel units.
2. 11" long samples of each exposed molding or trim.
3. 11" long samples of each suspension component.

1.5 QUALITY ASSURANCE

A. Manufacturer/Installer Qualifications:

1. Provide metal ceiling system components produced by a single manufacturer with a minimum 10 years' experience in actual production of specified products and with resources to provide consistent quality in appearance and physical properties, including production in an environmentally controlled indoor factory facility and having previously certified Miami-Dade County NOA certifications.
2. Provide suspension system components produced by a single manufacturer to provide compatible components for a complete metal ceiling system installation.
3. Perform installations using a firm with installers having no less than 3 years of successful experience on projects of similar size and requirements.

B. Regulatory Requirements:

1. Fire Rating Performance Characteristics: Install system to provide a flame spread of 0 - 25, complying with certified testing to ASTM E 84.
2. Structural Criteria: Install and certify system to comply with structural and wind load requirements of governing codes.
3. Installation Standard for Suspension System: Comply with ASTM C 636.
4. Miami-Dade County, Florida Notice of Acceptance No. 19-0214.02.

C. Pre-installation Conference: Conduct a conference, prior to start of installation, to review system requirements, shop drawings, and all coordination needs.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver system components in manufacturer's original unopened packages, clearly labeled.
- B. Store components in fully enclosed dry space. Carefully place on skids, to prevent damage from moisture and other construction activities.

EXTERIOR LINEAR METAL CEILING SYSTEM 09 54 23.11	3 of 7
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- C. Handle components to prevent damage to surfaces and edges, and to prevent distortion and other physical damage.

1.7 PROJECT CONDITIONS

- A. Begin system installations only after spaces are enclosed and weather-tight, and after all wet work and overhead work have been completed.
- B. Prior to starting installations, allow materials to reach ambient room temperature and humidity intended to be maintained for occupancy.

1.8 WARRANTY

- A. Provide specified manufacturer’s warranty against defects in workmanship, discoloration, or other defect considered undesirable by the Architect or Employer.
- B. This warranty shall remain in effect for a minimum period of one (1) year from date of initial acceptance.

1.9 MAINTENANCE

- A. Maintenance Instructions: Provide manufacturer’s standard maintenance and cleaning instructions for finishes provided.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design:
 - 1. Armstrong World Industries, Inc; 7160 Metal Works Linear 6" Plank: www.armstrong.com.
- B. Other acceptable manufacturers:
 - 1. 3A Composites USA, Inc.: www.alucobondusa.com..
- C. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 SYSTEM MATERIALS

- A. Linear metal plank soffit system for exterior installations:
 - 1. Miami-Dade County, Florida Notice of Acceptance No. 18-0725.15.

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- B. Panel Profile Type: 150F, roll formed .025" thick aluminum; 5-29/32" (150 mm) wide, 3/4" deep, with square interlocking, integral reveal closure edges.
 - 1. Length: Standard 10'.
- C. Suspension System (Concealed):
 - 1. Carrier: V-shaped roll-formed aluminum section with hook-shaped tabs spaced to receive panels. Finish is factory applied black enamel.
 - 2. Hanger Wire: 12 Ga. galvanized carbon steel.
 - 3. Seismic/Wind Uplift Compression Struts: Verify and insert proper sizes required to comply with governing codes, as designed by registered structural engineer.
- D. Perforations for ventilation only
 - 1. Percentage of soffit (10% max)
- E. Panel Finish: Paint; color to be selected by architect
 - 1. Powder Coat

2.3 ACCESSORY MATERIALS

- A. Panel Splice: Formed aluminum finished in matching.
- B. Edge trim: Manufacturer's standard edge trim moldings.
- C. Lighting Fixtures: Provide fixtures capable of being fully integrated with ceiling system and requiring no interruption of ceiling components, that are independently suspended, and as selected to conform to lighting criteria specified in Division 16.

PART 3- EXECUTION

3.1 EXAMINATION

- A. Examine substrates and structural framing to which acoustical metal panels attach or abut, with installer present, for compliance with requirements specified in this and other Sections that affect installation and anchorage, and other conditions affecting performance of metal panel ceilings.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordination: Furnish layouts for cast-in-place anchors, clips, and other ceiling anchors whose installation is specified in other Sections.

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- B. Measure each ceiling area and establish layout of acoustical metal pan units to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width units at borders, and comply with layout shown on reflected ceiling plans.
- C. Survey substrate for wall attachment to assure squareness and proper elevation for wall panel installation.

3.3 INSTALLATION

- A. General: Install acoustical metal pan ceilings, per manufacturers shop drawings provided, per manufacturer's written instructions and to comply with publications referenced below.
 - 1. CISCA "Ceiling Systems Handbook"
 - 2. Standard for Ceiling Suspension System Installations - ASTM C 636
 - 3. Standard for Ceiling Suspension Systems Requiring Seismic Restraint - ASTM E 580
 - 4. IBC (International Building Code) Standard for Seismic Zone for local area
- B. Suspend ceiling hangers from building's approved structural substrates 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, counter-splaying, or other equally effective means.
 - 3. Where width of ducts and other construction within ceiling plenum produce hanger spacings that interfere with location of hangers at spacing required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Utilize supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
 - 4. Where used secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure; that are appropriate for substrate; and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 5. Space hangers not more than 48" on-center, along each member supported directly from hangers, unless otherwise indicated; and provide hangers not more than 12" from ends of each member. Supply supporting calculations from licensed Structural Engineer verifying hanger spacing meets all requirements, when spacing exceeds those recommended.
 - 6. Level grid to 1/8" in 10' from specified elevation(s), square and true.

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7. Adjust suspension system runners so they are square (within .5 degree from 90 degrees) and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- C. Secure bracing wires to ceiling suspension members and to supports acceptable to Architect/Engineer and/or inspector. Suspend bracing from building's structural members and/or structural deck, as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs (unless directed otherwise).
 - D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical metal pan. Method of edge trim attachment and design of edge trims to be approved by Architect.
 1. Screw attach moldings to substrate at intervals not more than 18" on-center and not more than 6" from ends, leveling with ceiling suspension system to a tolerance of 1/8" in 10'. Miter corners accurately and connect securely.
 2. Do not use exposed fasteners, including pop rivets, on moldings and trim without prior written approval, or unless detailed otherwise.
 - E. Scribe and cut acoustical metal panel units for accurate fit at penetrations by other work through ceilings. Stiffen edges of cut units as required to eliminate evidence of buckling or variations in flatness exceeding referenced standards for stretcher-leveled metal sheet.
 - F. Install acoustical metal panel units in coordination with suspension system. Fit adjoining units to form flush, tight joints. Scribe and cut units for accurate fit at borders and around construction penetrating ceiling.

3.4 ADJUST AND CLEAN

- A. Adjust components to provide uniform tolerances.
- B. Replace all ceiling panels that are scratched, dented or otherwise damaged.
- C. Clean exposed surfaces with non-solvent, non-abrasive commercial type cleaner.

END OF SECTION 09 54 23.11

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SECTION 09 65 00 - RESILIENT FLOORING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Resilient tile flooring.
- B. Static control resilient tile flooring.
- C. Resilient base.
- D. Installation accessories.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors.
- C. Section 03 54 00 - Cast Underlayment.
- D. Section 09 05 61 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.
- E. Section 26 05 26 - Grounding and Bonding for Electrical Systems: Grounding and bonding of static control flooring to building grounding system.

1.3 REFERENCE STANDARDS

- A. ASTM D6329 - Standard Guide for Developing Methodology for Evaluating the Ability of Indoor Materials to Support Microbial Growth Using Static Environmental Chambers; 1998 (Reapproved 2023).
- B. ASTM E492 - Standard Test Method for Laboratory Measurement of Impact Sound Transmission through Floor-Ceiling Assemblies Using the Tapping Machine; 2022.
- C. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2019a, with Editorial Revision (2020).
- D. ASTM F150 - Standard Test Method for Electrical Resistance of Conductive and Static Dissipative Resilient Flooring; 2006 (Reapproved 2018).

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- E. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.
- F. ASTM F970 - Standard Test Method for Measuring Recovery Properties of Floor Coverings after Static Loading; 2022.
- G. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile; 2004 (Reapproved 2018).
- H. ASTM F1344 - Standard Specification for Rubber Floor Tile; 2021a.
- I. ASTM F1700 - Standard Specification for Solid Vinyl Floor Tile; 2020.
- J. ASTM F1861 - Standard Specification for Resilient Wall Base; 2021.
- K. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2023.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Shop Drawings: Indicate seaming plan.
- D. Verification Samples: Submit two samples, 12 by 12 inch in size illustrating color and pattern for each resilient flooring product specified.
- E. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.
- F. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of sub-floor is acceptable.
- G. Manufacturer's Qualification Statement.
- H. Installer's Qualification Statement.
- I. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
- J. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Flooring Material: 100 square feet of each type and color.

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3. Extra Wall Base: 25 linear feet of each type and color.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
- B. Store all materials off of the floor in an acclimatized, weather-tight space.
- C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
- D. Protect roll materials from damage by storing on end.
- E. Do not double stack pallets.

1.7 FIELD CONDITIONS

- A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.1 TILE FLOORING

- A. Vinyl Composition Tile: Homogeneous, with color extending throughout thickness.
 1. Manufacturers:
 - a. As indicated on Drawings.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
 2. Minimum Requirements: Comply with ASTM F1066, of Class corresponding to type specified.
 3. Size: 12 by 12 inch.
 4. VOC Content Limits: As specified in Section 01 61 16.
 5. Thickness: 0.125 inch.
 6. Pattern: As indicated on Drawings by manufacturer's designations.

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7. Color: As shown on drawings.

B. Vinyl Enhanced Tile: Surface-decorated, with wear layer.

1. Manufacturers:

a. As indicated on Drawings.

b. Substitutions: See Section 01 60 00 - Product Requirements.

2. Minimum Requirements: Comply with ASTM F1700, of Class corresponding to type specified.

3. Mold and Microbial Resistance: Highly resistant when tested in accordance with ASTM D6329; certified in accordance with UL 2824.

4. VOC Content Limits: As specified in Section 01 6116.

5. Plank Tile Size: 6 by 48 inch.

6. Total Thickness: 0.100 inch.

7. Pattern: As indicated on Drawings by manufacturer's designations.

8. Not used.

2.2 RESILIENT BASE

A. Resilient Base: ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style A-Straight and Style B-Cove, as indicated on Drawings..

1. Manufacturers:

a. As indicated on Drawings by manufacturer's designations.

b. Substitutions: See Section 01 60 00 - Product Requirements.

2. Height: 4 inch.

3. Thickness: 0.125 inch thick.

4. Finish: Satin.

5. Length: Roll.

6. Color: As indicated on drawings.

7. Accessories: Premolded end stops.

8. Manufacturers:

a. Allstate: www.allstaterubber.com

b. Substitutions: See Section 01 60 00 - Product Requirements.

2.3 ACCESSORIES

A. Primers, Adhesives, and Seaming Materials: Waterproof; types recommended by flooring manufacturer.

1. VOC Content Limits: As specified in Section 01 6116.

B. Adhesive for Vinyl Flooring:

1. Manufacturers:

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- a. H.B. Fuller Construction Products, Inc; TEC Flexera Premium Universal Adhesive: www.tecspecialty.com/#sle.
- b. Stauf USA, LLC; D737 High-Tack: www.staufusa.com/#sle.
- c. TEC, an H.B. Fuller Construction Products Brand; TEC Trowel Fast Vinyl Flooring Adhesive: www.tecspecialty.com/#sle.
- d. Substitutions: Section 01 6000 - Product Requirements.

- C. Moldings, Transition and Edge Strips: Same material as flooring.
- D. Copper Grounding Strips: Type and size as recommended by static control flooring manufacturer.
- E. Floor Polish for Static Control Flooring: Fluid-applied polish, intended to protect electrical properties of flooring, as recommended by static control flooring manufacturer.
- F. Filler for Coved Base: Plastic.
- G. Sealer and Wax: Types recommended by flooring manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
- C. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for resilient flooring installation by testing for moisture and pH.
 - 1. Test in accordance with Section 09 05 61.
 - 2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

- A. Prepare floor substrates for installation of flooring in accordance with Section 09 05 61.

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3.3 INSTALLATION

- A. Starting installation constitutes acceptance of sub-floor conditions.
- B. Install in accordance with manufacturer's instructions.
- C. Adhesive-Applied Installation:
 - 1. Spread only enough adhesive to permit installation of materials before initial set.
 - 2. Place copper grounding strip in conductive adhesive and apply additional adhesive to top side of strip before installing static control flooring. Allow strip to extend beyond flooring in accordance with static control flooring manufacturer's instructions. Refer to Section 26 05 26 for grounding and bonding to building grounding system.
 - 3. Fit joints and butt seams tightly.
 - 4. Set flooring in place, press with heavy roller to attain full adhesion.
- D. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
- E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
 - 1. Resilient Strips: Attach to substrate using adhesive.
- F. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
- G. Install flooring in recessed floor access covers, maintaining floor pattern.

3.4 TILE FLOORING

- A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless manufacturer's instructions say otherwise.
- B. Lay flooring with joints and seams parallel to building lines to produce symmetrical tile pattern.
- C. Install plank tile with a random offset of at least 6 inches from adjacent rows.

3.5 RESILIENT BASE

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
- B. Miter internal corners. At external corners, 'V' cut back of base strip to 2/3 of its thickness and fold. At exposed ends, use premolded units.

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- C. Install base on solid backing. Bond tightly to wall and floor surfaces.
- D. Scribe and fit to door frames and other interruptions.

3.6 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's instructions.

3.7 PROTECTION

- A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION 09 65 00

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SECTION 09 84 30 - SOUND-ABSORBING WALL AND CEILING UNITS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Sound-absorbing panels.

1.2 REFERENCE STANDARDS

- A. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2023.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
- C. ASTM E795 - Standard Practices for Mounting Test Specimens during Sound Absorption Tests; 2023.

1.3 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's printed data sheets for products specified.
- C. Shop Drawings: Fabrication and installation details, panel layout, fabric orientation, and wood grain orientation.
- D. Verification Samples: Fabricated samples of each type of panel specified; 12 by 12 inch, showing construction, edge details, and fabric covering.
- E. Test Reports: Certified test data from an independent test agency verifying that panels meet specified requirements for acoustical and fire performance.
- F. Manufacturer's qualification statement.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with at least three years of documented experience.

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1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect acoustical units from moisture during shipment, storage, and handling. Deliver in factory-wrapped bundles; do not open bundles until units are needed for installation.
- B. Store units flat, in dry, well-ventilated space; do not stand on end.
- C. Protect edges from damage.

PART 2 PRODUCTS

2.1 FABRIC-COVERED SOUND-ABSORBING UNITS

- A. General:
 - 1. Prefinished, factory assembled fabric-covered panels.
 - 2. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
- B. Fabric-Covered Acoustical Panels for Walls:
 - 1. Panel Core: Manufacturer's standard rigid or semi-rigid fiberglass core.
 - a. Facing: 1/16-inch tackable surface laminated to core.
 - 2. Panel Thickness: 1 inch.
 - 3. Edges: Perimeter edges reinforced by a formulated resin hardener.
 - 4. Corners: Square.
 - 5. Fabric: Woven polyester.
 - 6. Color: As indicated.
 - 7. Patterns: Where fabric with directional or repeating patterns or fabric with directional weave is used, mark for installation in same direction.
 - 8. Mounting Method: Back-mounted with mechanical fasteners.

2.2 FIBERGLASS SOUND-ABSORBING UNITS

- A. Manufacturers:
 - 1. Basis of Des
 - a. As indicated on drawings.
 - 2. Other acceptable manufacturers:
 - a. CertainTeed Corporation: www.certainteed.com/#sle.
 - b. LAMVIN: www.lamvin.com/#sle.
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Rigid Fiberglass Board for Walls:

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1. Sound Absorption: Noise Reduction Coefficient (NRC) of 0.70 for 1-inch thick material when tested in accordance with ASTM C423 for Type A mounting, per ASTM E795.
2. Surface Burning Characteristics: Flame Spread Index of 25, maximum; Smoke Developed Index of 50, maximum; when tested in accordance with ASTM E84.
3. Facing: 1/16-inch high-impact and tackable surface laminated to core.
4. Adhesive: Type recommended by wall covering manufacturer to suit application.

C. Semi-Rigid Fiberglass Board for Walls:

1. Sound Absorption: Noise Reduction Coefficient (NRC) of 0.65 for 1-inch thick material when tested in accordance with ASTM C423 for Type A mounting, per ASTM E795.
2. Surface Burning Characteristics: Flame Spread Index of 25, maximum; Smoke Developed Index of 50, maximum; when tested in accordance with ASTM E84.
3. Adhesive: Type recommended by wall covering manufacturer to suit application.

2.3 FABRICATION

- A. Fabric Wrapped, General: Fabricate panels to sizes and configurations as indicated, with fabric facing installed without sagging, wrinkles, blisters, or visible seams.
1. Where radiused or mitered corners are indicated, install fabric to avoid seams or gathering of material.
- B. Tolerances: Fabricate to finished tolerance of plus or minus 1/16 inch for thickness, overall length and width, and squareness from corner to corner.

2.4 ACCESSORIES

- A. Back-Mounting Accessories: Manufacturer's standard accessories for concealed support, designed to allow panel removal, and as follows:
1. Two-part clip and base-support bracket system; brackets designed to support full weight of panels and clips designed for lateral support, with one part mechanically attached to back of panel and the other attached to substrate.
- B. Panel Adhesive: Acceptable to acoustical panel manufacturer for application as indicated.

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PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates for conditions detrimental to installation of acoustical units. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install acoustical units in locations as indicated, following manufacturer's installation instructions.
- B. Install mounting accessories and supports in accordance with shop drawings.
- C. Align panels accurately, with edges plumb and top edges level. Scribe to fit accurately at adjoining work and penetrations.
- D. Install acoustical units to construction tolerances of plus or minus 1/16 inch for the following:
 - 1. Plumb and level.
 - 2. Flatness.
 - 3. Width of joints.

3.3 CLEANING

- A. Clean sound-absorptive panels upon completion of installation from dust and other foreign materials, following manufacturer's instructions.

3.4 PROTECTION

- A. Provide protection of installed acoustical panels until Date of Substantial Completion.
- B. Replace panels that cannot be cleaned and repaired to satisfaction of the Architect.

END OF SECTION 09 84 30

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SECTION 10 22 13 - WIRE MESH PARTITIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Wire mesh systems for walls.

1.2 RELATED REQUIREMENTS

- A. Section 08 71 00 - Door Hardware: Cylinders for locksets.
- B. Section 09 91 23 - Interior Painting.

1.3 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- B. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2021a.
- C. ASTM A510/A510M - Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel; 2020.
- D. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2021a.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for mesh materials, finishes.
- C. Shop Drawings: Indicate plan and vertical dimensions, elevations, component details; head, jamb, and sill details; location of hardware. Provide component details, anchorage, and type and location of fasteners.
 - 1. Show field measurements on shop drawings.
- D. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

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1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Wire Mesh Partitions:
1. Acorn Wire and Iron Works, Inc; Standard Duty 10 Gauge: www.acornwire.com/#sle.
 2. The G-S Company; Sure Guard Standard Duty: www.g-sco.com/#sle.
 3. Spaceguard Products; BeastWire Mesh Partitions with Standard Welded Wire Mesh- 2 inch square: www.spaceguardproducts.com/#sle.
 4. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 WIRE MESH PARTITIONS

- A. Wire Mesh Partitions: Factory-fabricated modular assemblies of panels, doors, anchors, hardware, and accessories as required to provide a complete system.
1. Design Criteria:
 - a. Design partition system to provide for movement of components without damage, undue stress on fasteners or other detrimental effects, when subject to design loads.
 - b. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

2.3 COMPONENTS

- A. Woven Wire Mesh: Standard duty.
1. Material: ASTM A510/A510M uncoated crimped steel wire.
 2. Wire Size: 10 gauge, 0.135 inch.
 3. Mesh Opening Size: 1-1/2 inch diamond shape.
 4. Mesh Weave: Plain weave, inter-crimped.
- B. Framing and Support Members:
1. Material: ASTM A36/A36M steel shapes and ASTM A500/A500M cold-formed steel tubing.
 2. Framing, Corner Posts, and Intermediate Support Members: Manufacturer's standard sizes for system specified and as indicated on drawings.

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3. Vertical Stiffeners: As required for partitions greater than 144 inches in height.

C. Doors: Same material as partitions, fully framed; manufacturer's standard construction and hardware for swing operation.

1. Locking: Mortise type cylinder locks as specified in Section 08 71 00.

D. Sheet Metal Base Panel: ASTM A1008/A1008M, cold rolled steel sheet.

2.4 FASTENERS

A. Bolts, Nuts and Washers: Hot dip galvanized.

B. Anchorage Devices: Provide power driven, powder actuated, and drilled expansion bolts.

2.5 ACCESSORIES

A. Bracing: Formed sheet steel, thickness determined for conditions encountered, manufacturer's standard shapes, same finish as framing members.

B. Plates, Gussets, Clips: Formed sheet steel, thickness determined for conditions encountered, manufacturer's standard shapes, same finish as framing members.

C. Post Caps: Manufacturer's standard.

D. Floor Pilaster Shoe: Manufacturer's standard.

E. Floor Base: Manufacturer's standard.

2.6 FABRICATION

A. Fit and assemble in largest practical sections for delivery to site, ready for installation.

B. Make exposed joints flush or tight.

C. Provide components required for anchorage to adjacent construction.

2.7 FINISHES

A. Painted Finish: Manufacturer's standard powder coat finish.

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PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces and required openings are ready to receive work.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install items plumb and level, accurately fitted, free from distortion or defects.

3.3 TOLERANCES

- A. Maximum Variation From Plumb or Level: 1/4 inch.
- B. Maximum Misalignment From True Position: 1/4 inch.

3.4 ADJUSTING

- A. Adjust doors to achieve free movement.

3.5 CLEANING

- A. Remove temporary protection to prefinished surfaces.

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SECTION 10 22 39 - FOLDING PANEL PARTITIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Top-supported folding panel partitions, horizontal opening.

1.2 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Wood blocking and track support shimming.
- B. Section 09 72 00 - Wall Coverings: Product requirements for vinyl fabric finish for installation by this section.

1.3 REFERENCE STANDARDS

- A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- C. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
- E. ASTM E413 - Classification for Rating Sound Insulation; 2022.
- F. ASTM E557 - Standard Guide for Architectural Design and Installation Practices for Sound Isolation Between Spaces Separated by Operable Partitions; 2012 (Reapproved 2020).
- G. ASTM E596 - Standard Test Method for Laboratory Measurement of Noise Reduction of Sound-Isolating Enclosures; 2022.
- H. ASTM F793/F793M - Standard Classification of Wall Coverings by Use Characteristics; 2020.
- I. UL (FRD) - Fire Resistance Directory; Current Edition.

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1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene at project site seven calendar days prior to scheduled beginning of construction activities of this section to review section requirements.
 - 1. Require attendance by representatives of installer.
 - 2. Notify Architect four calendar days in advance of scheduled meeting date.

1.5 SUBMITTALS

- A. See Section 01 30 00, for submittal procedures.
- B. Product Data: Provide data on partition materials, operation, hardware and accessories, electric operating components, track switching components, and colors and finishes available.
- C. Design Data: Design calculations, bearing seal and signature of structural engineer licensed to practice in the State in which the Project is located, showing loads at points of attachment to the building structure.
- D. Shop Drawings: Indicate opening sizes, track layout, details of track and required supports, static and dynamic loads, location and details of pass door and frame, adjacent construction and finish trim, and stacking depth.
- E. Samples for Selection: Submit two samples of full manufacturer's color range for selection of colors.
- F. Samples for Review: Submit two samples of surface finish, 12 by 12 inches size, illustrating quality, colors selected, texture, and weight.
- G. Certificates: Certify that partition system meets or exceeds specified acoustic requirements.
- H. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods. Describe cleaning materials detrimental to finish surfaces and hardware finish.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified this section with minimum three years of documented experience.

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1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until installation.

1.8 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Folding Panel Partitions - Horizontal Opening:
 - 1. Basis of Design:
 - a. Modernfold, a DORMA Group Company Legacy Series : www.modernfold.com/#sle.
 - 2. Other acceptable manufacturers:
 - a. Kwik-Wall Company: www.kwik-wall.com/#sle.
 - b. Moderco, Inc: www.moderco.com/#sle.
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 FOLDING PANEL PARTITIONS - HORIZONTAL OPENING

- A. Folding Panel Partitions: Center opening; paired panels; side stacking; motor operated.
- B. Panel Construction:
 - 1. Frame: 16 gauge, 0.0598 inch thick formed sheet steel frame top, bottom, jambs, and intermediates; welded construction, with acoustical insulation fill.
 - 2. Substrate: Steel.
 - 3. Panel Substrate Facing: Steel sheet, manufacturer's standard thickness.
- C. Panel Finishes:
 - 1. Facing: Vinyl coated fabric.
- D. Panel Seals:
 - 1. Panel to Panel Seals: Grooved and gasketed astragals, with continuous flexible ribbed vinyl seal fitted to panel edge construction; color to match panel finish.
 - 2. Acoustic Seals: Flexible acoustic seals at jambs, meeting mullions, ceilings, retractable floor and ceiling seals, and above track to structure acoustic seal.
- E. Suspension System:

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1. Track: Formed steel; 1-1/4 by 1-1/4 inch size; thickness and profile designed to support loads, steel sub-channel and track connectors, and track switches.
2. Carriers: Nylon wheels on trolley carrier at top of every second panel, sized to carry imposed loads, with threaded pendant bolt for vertical adjustment.

F. Performance:

1. Acoustic Performance:
 - a. Noise Reduction Coefficient (NRC): ASTM E596, NRC of 0.65 minimum.
2. Surface Burning Characteristics of Panel Finish: Flame spread/smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84.
3. Installed partition system track capable of supporting imposed loads, with maximum deflection of 1/360 of span.

G. Accessories:

1. Not used.
2. Acoustic Sealant: As recommended by partition manufacturer.

2.3 MATERIALS

- A. Aluminum Extrusions: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.
- B. Vinyl Coated Fabric: ASTM F793 Category VI, polyvinyl fluoride (PVC) finish for washability and improved flame retardance; color as selected by Architect from manufacturer's standard range.
- C. Acoustic Insulation:
 1. Type: As required for acoustic performance indicated.
 2. Thickness: As required for acoustic performance indicated.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify track supports are laterally braced and will permit track to be level within 1/4 inch of required position and parallel to the floor surface.
- C. Verify floor flatness of 1/8 inch in 10 feet, non-cumulative.
- D. Verify wall plumbness of 1/8 inch in 10 feet, non-cumulative.

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3.2 INSTALLATION

- A. Install partition in accordance with manufacturer's instructions and ASTM E557.
- B. Fit and align partition assembly and pocket doors level and plumb.
- C. Install acoustic sealant to achieve required acoustic performance.
- D. Coordinate electrical connections.

3.3 ADJUSTING

- A. Adjust partition assembly to provide smooth operation from stacked to full open position. Do not over-compress acoustic seals.
- B. Visually inspect partition in full extended position for light leaks to identify a potential acoustical leak.
- C. Adjust partition assembly to achieve lightproof seal.

END OF SECTION 10 22 39

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SECTION 10 26 01 - WALL AND CORNER GUARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Corner guards.
- B. Rub strip
- C. Wall cap, end wall protector.

1.2 RELATED REQUIREMENTS

- A. Section 05 50 00 - Metal Fabrications: Anchors for attachment of work of this section, concealed in wall.
- B. Section 06 10 00 - Rough Carpentry Blocking for wall and corner guard anchors.
- C. Section 09 72 00 - Wall Coverings: Terminating wall covering at corner guard.

1.3 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
- D. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2022.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate physical dimensions, features, anchorage details, and rough-in measurements.
- C. Samples: Submit two sections of corner guard, 24 inch long, illustrating component design, configuration, color and finish.

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- D. Manufacturer's Instructions: Indicate special procedures, perimeter conditions requiring special attention.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Wall and Corner Guards:
1. Basis of Design:
 - a. Construction Specialties, Inc; Acrovyn SSM-15N: www.c-sgroup.com.
 2. Other acceptable manufacturers:
 - a. Babcock-Davis: www.babcockdavis.com/#sle.
 - b. Inpro: www.inprocorp.com.
 - c. Nystrom, Inc: www.nystrom.com/#sle.
 - d. Trim-Tex, Inc: www.trim-tex.com/#sle.
 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 COMPONENTS

- A. Corner Guards - Surface Mounted:
1. Material: Polyethylene terephthalate (PET or PETG); PVC-free with full height extruded aluminum retainer.
 2. Performance: Resist lateral impact force of 100 lbs at any point without damage or permanent set.
 3. Surface Burning Characteristics: Provide assemblies with flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
 4. Width of Wings: 3 inches.
 5. Corner: Radiused.
 6. Color: As selected from manufacturer's standard colors.
 7. Length: One piece.
- B. Wall Panels: Surface Mounted: Extruded one-piece unit without splices, installed with screws.
1. Material: Polyethylene terephthalate (PET or PETG); PVC-free; textured surface.
 2. Styles: Size as indicated on Drawings.
 3. Color: As selected from manufacturer's standard colors.

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4. Surface Burning Characteristics: Provide assemblies with flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.

C. Wall Caps -

1. Material: High impact vinyl with full height extruded aluminum retainer.
2. Performance: Resist lateral impact force of 100 lbs at any point without damage or permanent set.
3. Surface Burning Characteristics: Provide assemblies with flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
4. Width of Wings: 3 inches.
5. Corner: Radiused.
6. Color: As scheduled.
7. Length: One piece.

- D. Mounting Brackets and Attachment Hardware: Appropriate to component and substrate.

2.3 FABRICATION

- A. Fabricate components with tight joints, corners and seams.
- B. Pre-drill holes for attachment.
- C. Form end trim closure by capping and finishing smooth.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that rough openings, concealed blocking, and anchors are correctly sized and located.
- B. Verify that field measurements are as instructed by the manufacturer.

3.2 INSTALLATION

- A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to wall framing members only.

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3.3 TOLERANCES

- A. Maximum Variation From Required Height: 1/4 inch.
- B. Maximum Variation From Level or Plane For Visible Length: 1/4 inch.

END OF SECTION 10 26 01

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SECTION 10 44 00 - FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fire extinguishers.
- B. Fire extinguisher cabinets.
- C. Accessories.

1.2 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.

1.3 REFERENCE STANDARDS

- A. NFPA 10 - Standard for Portable Fire Extinguishers; 2022.
- B. UL (DIR) - Online Certifications Directory; Current Edition.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide extinguisher operational features, extinguisher ratings and classifications, color and finish, anchorage details, and installation instructions.
- C. Shop Drawings: Indicate cabinet physical dimensions, rough-in measurements for recessed cabinets, wall bracket mounted measurements, and location.
- D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

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1.5 FIELD CONDITIONS

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Fire Extinguishers:
 1. Ansul, a Tyco Business; Cleanguard: www.ansul.com/#sle.
 2. Nystrom, Inc; ABC Dry Chemical: www.nystrom.com/#sle.
 3. Pyro-Chem, a Tyco Business; ABCR Dry Chemical: www.pyrochem.com/#sle.
 4. Strike First Corporation of America; ABC-Seamless Steel Fire Extinguisher: www.strikefirstusa.com/#sle.
 5. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Fire Extinguisher Cabinets and Accessories:
 1. Basis of Design:
 - a. Larsen's Manufacturing Co; Occult Series: www.larsensmfg.com/#sle.
 2. Other acceptable manufacturers:
 - a. Activar Construction Products Group, Inc. - JL Industries: www.activarcpg.com/#sle.
 - b. Kidde, a unit of United Technologies Corp: www.kidde.com/#sle.
 - c. Nystrom, Inc: www.nystrom.com/#sle.
 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 FIRE EXTINGUISHERS

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
 1. Provide extinguishers labeled by UL for the purpose specified and indicated.
- B. Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gage.
 1. Stored Pressure Operated: Deep Drawn.
 2. Class: A:B:C.
 3. Size: 20 pound.
 4. Finish: Baked polyester powder coat red color.
 5. Temperature range: Minus 40 degrees F to 120 degrees F.

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2.3 FIRE EXTINGUISHER CABINETS

- A. Metal: Formed primed steel sheet; 0.036 inch thick base metal.
- B. Cabinet Configuration: Recessed type.
 - 1. Sized to accommodate accessories.
 - 2. Trimless type.
 - 3. Form cabinet enclosure with right angle inside corners and seams. Form perimeter trim and door stiles.
- C. Door: 5/8 inch thick, reinforced for flatness and rigidity; latch. Hinge doors for 180 degree opening with continuous piano hinge. Provide nylon catch.
- D. Door Glazing: Glass, clear, 1/8 inch thick tempered. Set in resilient channel gasket glazing.
- E. Cabinet Mounting Hardware: Appropriate to cabinet. Pre-drill for anchors.
- F. Weld, fill, and grind components smooth.
- G. Finish of Cabinet Interior: White enamel.

2.4 ACCESSORIES

- A. Extinguisher Brackets: Formed steel, chrome-plated.
- B. Extinguisher Theft Alarm: Battery operated alarm, 10 second delay for disarming, activated by opening cabinet door.
 - 1. Not used.
- C. Cabinet Signage: FIRE EXTINGUISHER.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify rough openings for cabinet are correctly sized and located.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install cabinets plumb and level in wall openings.

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- C. Secure rigidly in place.
- D. Place extinguishers in cabinets.
- E. Position cabinet signage at pull side of door oriented vertically.

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SECTION 10 51 29 - PHENOLIC LOCKERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Phenolic lockers.
- B. Locker benches.

1.2 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry Wood blocking and nailers.

1.3 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
- C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's published data on locker construction, sizes and accessories.
- C. Shop Drawings: Indicate locker plan layout, numbering plan and key codes.
- D. Samples: Submit two samples 3 by 6 inches in size, of each each color scheduled scheduled.
- E. Manufacturer's Installation Instructions: Indicate component installation assembly.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect locker finish and adjacent surfaces from damage.

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PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Phenolic Lockers:
1. ASI Storage Solutions: www.asi-storage.com/#sle.
 2. Columbia Lockers, a division of PISC: www.pisc.com/#sle.
 3. Summit Lockers, Inc: www.summitlockers.com/#sle.
 4. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 LOCKER APPLICATIONS

- A. Wardrobe Lockers: Two tier lockers, mounting as indicated on drawings.
1. Accessibility: Comply with ICC A117.1 and ADA Standards.
 2. Width: 12 inches.
 3. Depth: 18 inches.
 4. Height: 72 inches.
 5. Locker Configuration: Two tier.
 6. Fittings: Shelf, 2 side hooks, 1 double center hook.
 7. Locking: Built-in digital keypad locks.
- B. Locker Benches: Stationary type; bench top of laminated birch; painted steel pedestals.
1. Height: 18 inch.
 2. Length: 42 inch.
 3. Depth: 20 inch.

2.3 PHENOLIC LOCKERS

- A. Lockers: Factory assembled, made of phenolic core panels with mortise and tenon joints and stainless steel mechanical joint fasteners; fully finished inside and out; each locker capable of standing alone.
1. Doors: Full overlay, covering full width and height of locker body; square edges.
 2. Panel Core Exposed at Edges: Machine polished, without chips or tool marks; square edge unless otherwise indicated.
 3. Where locker ends or sides are exposed, finish the same as fronts or provide extra panels to match fronts.
 4. Ventilation: By holes drilled in tops, bottoms, and intermediate shelves, and by open space between the back of door and locker body.
 5. Provide filler strips where indicated, securely attached to lockers.

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6. Door Color: As selected by Architect; allow for 2 different colors.
 7. Body Color: Manufacturer's standard white or light color.
 8. Fasteners for Accessories and Locking Mechanisms: Tamperproof type.
- B. Component Thicknesses:
1. Doors: 1/2 inch minimum thickness.
 2. Locker Body: One of the following combinations:
 3. End Panels and Filler Panels: 1/2 inch minimum thickness.
- C. Phenolic Core Panels: Nonporous phenolic resin and paper core formed under high pressure, with natural colored finished edges, integral melamine surface, matte finish, and uniform surface appearance; glued laminated panels not acceptable.
1. Core color: Black.
 2. Surface Burning Characteristics: Flame spread index of 75 or less, and smoke developed index of 450 or less; when tested in accordance with ASTM E84.
- D. Hinges: Stainless steel, black powder coat, black powder coat, or satin finish; minimum of 180 degree 180 degree opening; either exposed barrel 5-knuckle hinge attached to back of door and inside of body with tamperproof screws tamperproof screws, or concealed cabinet style hinge attached with tamperproof screws.
- E. Coat Hooks: Stainless steel or reinforced nylon; attached with tamperproof screws.
- F. Number Plates: Manufacturer's standard, minimum 4-digit, permanently attached with adhesive; may be field installed.
- G. Built-In Digital Keypad Locks:
1. Built-In Digital Keypad Lock: Battery-powered lock with alphanumeric keypad for 4-digit access code; optional access with programming, manager bypass, or user key.
 - a. Latch: Deadbolt.
 - b. Temporary or shared access with user-defined code.
- H. Lock Strike: Stainless steel, or black high impact ABS plastic strike plate attached to locker body with throughbolts.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that prepared bases are in correct position and configuration.
- B. Verify bases and embedded anchors are properly sized.

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3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install lockers plumb and square.
- C. Place and secure on prepared base.
- D. Secure lockers with anchor devices to suit substrate materials. Minimum Pullout Force: 100 pounds.
- E. Bolt adjoining locker units together to provide rigid installation.
- F. Install end panels and filler panels.
- G. Install accessories.
- H. Replace components that do not operate smoothly.

3.3 CLEANING

- A. Clean locker interiors and exterior surfaces.

END OF SECTION 10 51 29

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SECTION 11 11 29 - INDUSTRIAL SHOP 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. Workbench, 8-foot

- B. Related Requirements:

- 1. Section 033000 "Cast-in-Place Concrete" for setting sleeves, inserts, and anchoring devices in concrete.

- C. DEFINITIONS

- 1. ICC-ES: ICC-Evaluation Service.

- D. COORDINATION

- 1. Coordinate size and location of recesses and inserts in concrete and masonry required for installation of shop equipment.
- 2. Coordinate sizes and locations of blocking and backing required for installation of shop equipment attached to wall and ceiling assemblies.
- 3. Coordinate locations and installation of shop equipment that may interfere with ceiling systems including lighting, HVAC, speakers, sprinklers, access panels, electrical switches or outlets, and floor drains.
- 4. Coordinate locations and requirements of utility service connections.

- E. PREINSTALLATION MEETINGS

- 1. Preinstallation Conference: Conduct conference at Project site.

- F. ACTION SUBMITTALS

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1. Product Data: For each type of product. Clearly mark each submittal to show which products and options are applicable; do not include manufacturer's complete catalog when pertinent information is contained on a selected page(s). Include the following:
 - a. Manufacturer's model number.
 - b. Accessories and components that will be included for Project.
 - c. Clearance requirements for access and maintenance.
 - d. Utility service connections for electrical power and controls, plumbing, compressed air, and other utility services as applicable. Include rough-in dimensions.
 - e. Installation instructions.

2. Shop Drawings: For custom fabricated shop equipment. Include plans, elevations, sections, rough-in dimensions, fabrication details, utility service requirements, and attachments to other work.

3. Seismic Restraint Product Data: Equipment requiring seismic restraint are itemized under Part 2 Article "Performance Requirements."
 - a. Illustrate and indicate style, material, strength, fastening provision, and finish for each type and size of seismic-restraint component required.
 - b. Include one of the following types of submittals, for each type of shop equipment, substantiating that seismic restraint is suitable for conditions indicated.
 - 1) Preapproved Ratings: Documentation based on preapproved ratings are preferred. Ratings shall be based on horizontal and vertical load testing and analysis.
 - (a) Provide ratings from one of the following:
 - (1) ICC-ES.
 - (2) OPA number from OSHPD.
 - (3) An agency acceptable to authorities having jurisdiction.
 - (b) For seismic anchorage with preapproved rating, restraint devices shall bear anchorage preapproval showing maximum seismic-restraint ratings by rating agency submitted.

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(c) If preapproved ratings are unavailable, submittals based on independent testing are preferred.

2) Independent Testing: Ratings based on testing by a qualified independent testing agency.

(a) Documentation based on independent testing are preferred to ratings based on calculations.

3) Delegated Design: If preapproved rating documentation or independent testing documentation are not available, provide calculations. Calculations (including combining shear and tensile loads) to support seismic restraint designs must be signed and sealed by a qualified professional engineer.

4. Samples:

- a. Initial Selection: For units with factory-applied color finishes.
- b. Verification: For each factory-applied color finish required, in manufacturer's standard sizes.

5. Product Schedule: For shop equipment. Use same equipment number indicated in Specifications and on Drawings.

G. INFORMATIONAL SUBMITTALS

1. Qualification Data: For Installer of the following:

- a. Shop equipment permanently fixed in place.
- b. Shop equipment permanently connected to electrical power, plumbing, compressed air, and other utility services.
- c. Shop equipment installed with seismic restraints.

2. Field quality-control reports.

3. Sample Warranties: For manufacturers' special warranties.

H. CLOSEOUT SUBMITTALS

1. Operation and Maintenance Data: For each shop equipment unit to include in operation and maintenance manuals. In addition to items specified in Section 017823 "Operation and Maintenance Data," include a product schedule for each shop equipment unit; include the following:

- a. Equipment number used in Specifications and on Drawings.

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- b. Manufacturer's name and model number.
- c. Contact Information:
 - 1) A list of factory-authorized service representative(s). Include street address, telephone number(s), and email address for each.
 - 2) List of supplier(s) for repair parts. Include street address, telephone number(s), and email address for each.
- d. Description of system and components.
- e. Schematic Diagrams: For electrical power and controls, plumbing, compressed air, and other utility services as applicable.
- f. Operating Instructions: In writing by manufacturer.
- g. Preventative Maintenance: A written schedule of recommended procedures and frequency required to validate warranties. Failure to provide preventative maintenance information will indicate that it is not a condition for validation of warranties.
- h. List of manufacturer recommended maintenance materials required for 1 year of normal equipment operations.

I. QUALITY ASSURANCE

- 1. Manufacturer Qualifications: Firms with not less than 5 years experience in manufacturing shop equipment units 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 manufacturer representative requirements.
 - a. Manufacturer Product Representative Qualifications: An authorized representative of manufacturer who is trained and approved by shop equipment manufacturer to assist Owner in selecting preferred layouts for drawer dividers, preferred shelf settings; preferred shelf or tray styles furnished for shop systems, and other preferences.
- 2. Installer Qualifications: Firms or individuals experienced in installing or assembling shop equipment units 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.
- 3. The requirements for each type of shop equipment specify the minimum level of quality, features, performance, and construction; and originate from the basis of design product indicated.

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J. DELIVERY, STORAGE, AND HANDLING

1. Deliver, store, and handle materials, components, and equipment in manufacturer's protective packaging.
 - a. Packaging shall be suitable for protection during shipment and shop in humid and dusty conditions.
 - b. Outside of packaging shall be indelibly labeled with shop equipment description and number used in this specification, and with description of contents. Packaging within packaging shall be similarly labeled.
 - c. Each equipment item shall be delivered complete in one shipment.
2. Prior to acceptance, verify that delivery is not damaged from shipping and weather exposure. Compare packaged contents with packing list to verify complete receipt of equipment and accessories specified.
3. Store materials, components, and equipment off the ground, under cover, and in a dry location.

K. FIELD CONDITIONS

1. Environmental Limitations: Do not deliver or install shop equipment until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at levels intended for building occupants during the remainder of the construction period.

L. WARRANTY

1. Manufacturer's Special Warranty: Manufacturer agrees to repair, restore, or replace shop equipment units that fail in materials or workmanship within specified warranty period.
2. Failures include, but are not limited to:
 - a. Operation or control system failure, including excessive malfunctions.
 - b. Performances below specified ratings.
 - c. Excessive wear, rough operation, premature parts damage, loosening or loss, all resulting from normal operations.
 - d. Deterioration of metals, metal finishes, and other materials beyond normal wear.
 - e. Unsafe conditions.
 - f. Need for excessive maintenance.

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- g. Abnormal noise or vibration.
 - h. Rough and substandard operation.
 - i. Loose, damaged, and missing parts.
3. Defects shall not include damage due to neglect, misuse, or situations resulting from non-performance of a manufacturer's recommended preventive maintenance schedule.
 4. Warranty Period: 1 years from date of Substantial Completion.

PART 2 PRODUCTS

A. SUBSTITUTION LIMITATIONS

1. Comply with administrative and procedural requirements of Section 012500 "Substitution Procedures."
 - a. If substitutions are allowed, acceptance will be substantially based contractor's completeness in preparing comparative data (differences and similarities) between specified product or material and proposed substitution. Include attributes of specified product or material (i.e. description, reference standard, performance requirement) and corresponding attributes of substitution.

B. MAINTENANCE MATERIALS

1. Repair parts for shop equipment shall be readily available from part suppliers located in the United States.
 - a. Repair parts shall be available for no less than 7 years from date of Substantial Completion.
 - b. Emergency parts orders shall be available for delivery within 24 hours.
 - c. Routine parts orders shall be available for delivery within 72 hours.

C. REGULATORY REQUIREMENTS

1. 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. Comply with Federal, State, and local laws, regulations and safety standards.

D. PERFORMANCE REQUIREMENTS

1. Seismic Restraint:

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- a. The following shop equipment shall be installed with seismic-restraint devices.
 - 1) Workbench, 8 feet
- b. Seismic Performance: Shop equipment units shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- c.
 - 1) Component Importance Factor: 1.0
 - 2) Other Seismic Performance and Design Criteria. See Structural Drawings.

E. EQUIPMENT LABELING

1. Label each major item of equipment with a non-corrosive label with the following information permanently applied:
 - a. Manufacturer's name and address.
 - b. Equipment model number and serial number.
 - c. Pertinent utility and operating data.
2. Label Material and Thickness: Either of following:
 - a. Brass, 0.032 inch minimum thickness.
 - b. Stainless steel, 0.025 inch minimum thickness.
 - c. Aluminum, 0.032 inch minimum thickness.
 - d. Anodized aluminum, 0.032 inch minimum thickness.
 - e. Multilayer, multicolor, plastic for mechanical engraving, 1/8 inch minimum thickness.
3. Label text shall contrast with label background and be easily readable from 24 inches distance.
4. Factory attached labels securely on equipment in a prominent location.

F. WORKBENCH, 8 FEET

1. Basis of Design Products: Subject to compliance with requirements, provide products as specified and as indicated on Drawing's Industrial Equipment Schedule (Drawing's Schedule) or equal products by one of the following.

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- a. Equipto (Tatamy, PA; 610-253-2775)
- b. Strong Hold (Louisville, KY; 800-880-2625).
- c. Little Giant Products (University Park, IL; 708-534-5500).

2. Capacities/Dimensions:

- a. Overall Equipment Dimensions, Nominal: As indicated on Drawings Schedule.
- b. Work surface thickness: 12 gauge
- c. Load capacity: Minimum 2,500 pounds

3. Features/Performance/Construction:

- a. Legs: Workbench legs shall be minimum 2 by 2 by 3/16 inch steel tubing.
- b. Leg braces: Leg braces shall be minimum 2 by 1/4 inch steel plate continuously welded to tubing Shelf fastening shall consist of slip-in shelf brackets
- c. Top braces: Top braces shall be minimum 2 by 2 by 1/4 inch steel angle with continuous electrical welds to tubing.
- d. Top: Top shall be 12 gauge steel plate with 50 percent minimum electrical welds to top braces. All edges shall be ground smooth.
- e. Welds: All welds shall conform to American Welding Society standards.
- f. Seismic Restraint: Provide seismic restraint components of type approved by preapproved ratings submittal, independent testing submittal, or delegated design submittal and complying with Part 2 Article "Performance Requirements."

4. Metal Finish: Enamel Paint or Durable powder coated steel in manufacturer's standard colors.

PART 3 EXECUTION

A. EXAMINATION

- 1. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- 2. Examine floors for suitable conditions where shop equipment will be installed.
- 3. Examine walls and ceilings to which shop equipment will be attached for properly located blocking, grounds, or other solid backing for attachment of support fasteners.
- 4. Examine utility services to which shop equipment will be connected for proper location and required type.

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5. Proceed with installation only after unsatisfactory conditions have been corrected.

B. PREPARATION

1. Vacuum and clean finished floor over which shop equipment, of type covering floor, shall be installed.

C. INSTALLATION

1. Install shop equipment according to manufacturer's written instructions and, if applicable, approved shop drawings. Unless indicated otherwise install equipment level, plumb, square, rigid, and true. Install free of dents or distortion. Make connections to form a rigid structure, free of buckling and warping.
 - a. Install exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.
 - b. Install braces, straps, plates, brackets, and other reinforcements as needed to support equipment loading and as required for stability.
 - c. Anchor equipment indicated to be permanently fixed in place using fasteners of type recommended by equipment manufacturer.
 - d. Connect equipment to utilities specified.
 - e. Seismic Restraints: Install seismic-restraint devices using methods approved by preapproved ratings submittal, independent testing submittal, or delegated design submittal provided for each shop equipment type.
2. Install equipment with access and maintenance clearances that comply with manufacturer's written installation instructions and with requirements of authorities having jurisdiction.

D. ADJUSTING

1. Adjust shop equipment so that connectors and other components engage accurately and securely.
2. Adjust and lubricate operable components to operate smoothly and easily, without binding or warping. Check and readjust operating hardware.

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E. FIELD QUALITY CONTROL

1. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
 - a. Perform visual and utilities (electrical, plumbing, and compressed air as applicable) inspection and testing for each shop equipment unit according to manufacturers' written recommendations. Certify compliance with each manufacturer's equipment-performance parameters.
 - b. Leak Test for Plumbing and Compressed Air: After installation, test for leaks. Repair leaks and retest until no leaks exist.
 - c. Operational Test: After installation, start units to confirm proper operation.
 - d. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and components.
 - e. See Section 014000 "Quality Requirements" for retesting and reinspecting requirements and Section 017300 "Execution" for requirements for correcting the Work.
2. A shop equipment unit will be considered defective if it does not pass tests and inspections.
3. Prepare test and inspection reports.

F. CLEANING AND PROTECTING

1. Clean finished surfaces and make ready for use. Remove residual oil, grease, solvents, and other contaminants using methods and products that will not damage equipment surfaces.
2. Touch up marred finishes or replace shop equipment that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by shop equipment manufacturer.
3. Replace shop equipment components that have been damaged beyond successful repair by finish touchup or similar minor repair procedures.
4. Protect installed products from damage during remainder of the construction period.

G. DEMONSTRATION AND TRAINING

1. Engage a factory-authorized service representative to demonstrate operation of shop equipment to Owner's designated personnel.

END OF SECTION 11 11 29

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SECTION 11 30 13 - RESIDENTIAL APPLIANCES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Kitchen appliances.

1.2 RELATED REQUIREMENTS

- A. Section 22 11 16 - Domestic Water Piping: Plumbing connections for appliances.
- B. Section 26 27 26 - Wiring Devices: Electrical connections for appliances.

1.3 REFERENCE STANDARDS

- A. UL (DIR) - Online Certifications Directory; Current Edition.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.
- C. Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Electric Appliances: Listed and labeled by UL (DIR) and complying with NEMA Standards (National Electrical Manufacturers Association).

1.6 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide five (5) year manufacturer warranty on refrigeration system of refrigerators.

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- C. Provide ten (10) year manufacturer warranty on magnetron tube of microwave ovens.
- D. Provide ten (10) year manufacturer warranty on tub and door liner of dishwashers.

PART 2 PRODUCTS

2.1 KITCHEN APPLIANCES

- A. Provide Equipment Eligible for Energy Star Rating: Energy Star Rated.
- B. Refrigerator, E-01: Free-standing, bottom-mounted freezer, and frost-free.
 - 1. Capacity: Total minimum refrigerator storage of 21.9 cubic ft; minimum 6.04 cubic ft. freezer capacity.
 - 2. Energy Usage: Minimum 20 percent more energy efficient than energy efficiency standards set by U.S. Department of Energy (DOE).
 - 3. Features: Include glass shelves, automatic icemaker, and light in freezer compartment.
 - 4. Exterior Finish: Stainless steel.
 - 5. Basis of Design:
 - a. GE Appliances: model GTE22JSNSS: www.geappliances.com.
 - 6. Other acceptable manufacturers:
 - a. Frigidaire Home Products: www.frigidaire.com/#sle.
 - b. Whirlpool Corp: www.whirlpool.com/#sle.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Refrigerator, E-02: Built-in, undercounter, and frost-free.
 - 1. Capacity: Total minimum refrigerator storage of 4.8 cubic ft.
 - 2. Energy Usage: Minimum 20 percent more energy efficient than energy efficiency standards set by U.S. Department of Energy (DOE).
 - 3. Not used.
 - 4. Exterior Finish: Stainless steel.
 - 5. Basis of Design:
 - a. Summit Appliance; model ADRD24: www.summitappliance.com.
 - 6. Other acceptable manufacturers:
 - a. Frigidaire Home Products: www.frigidaire.com/#sle.
 - b. GE Appliances: www.geappliances.com/#sle.
 - c. Whirlpool Corp: www.whirlpool.com/#sle.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Range, E-07: Electric, free-standing, with glass-ceramic cooktop.
 - 1. Size: 30 inches wide.
 - 2. Oven: Self-cleaning.

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3. Elements: Four (4).
4. Controls: Solid state electronic.
5. Features: Include automatic meat thermometer, storage drawer, oven door window, broiler pan and grid, and oven light.
6. Exterior Finish: Stainless steel, color as indicated.
7. Basis of Design:
 - a. GE Appliances; model JB645RKSS: www.geappliances.com.
8. Other acceptable manufacturers:
 - a. Frigidaire Home Products: www.frigidaire.com/#sle.
 - b. Not used.
 - c. Whirlpool Corp: www.whirlpool.com/#sle.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.

E. Microwave, E-05: Countertop.

1. Capacity: 1.1 cubic ft.
2. Power: 1000 watts.
3. Features: Include turntable and cooktop light.
4. Exterior Finish: Stainless steel.
5. Basis of Design:
 - a. Sharp Electronics Corporation; Carousel SMC1132CS: www.sharpusa.com.
6. Manufacturers:
7. Other acceptable manufacturers:
 - a. Frigidaire Home Products: www.frigidaire.com/#sle.
 - b. GE Appliances: www.geappliances.com/#sle.
 - c. Whirlpool Corp: www.whirlpool.com/#sle.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.

F. Microwave, E-06: Over-the-range.

1. Capacity: 2.2 cubic ft.
2. Power: 1000 watts.
3. Features: Include turntable, cooktop light, night light, and 2-speed exhaust fan.
4. Exterior Finish: Stainless steel.
5. Basis of Design:
 - a. GE Appliances; model PVM9225SRSS: www.geappliances.com.
6. Other acceptable manufacturers:
 - a. Frigidaire Home Products: www.frigidaire.com/#sle.
 - b. Whirlpool Corp: www.whirlpool.com/#sle.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.

G. Dishwasher, E-03: Undercounter.

1. Controls: Solid state electronic.

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2. Wash Levels: Three (3).
3. Cycles: 9, including Auto, Heavy, Delicate, Normal, Turbo, Download Cycle, Machine Clean, Rinse, Express.
4. Features: Include rinse aid dispenser, optional no-heat dry, optional water temperature boost, adjustable upper rack, and adjustable lower rack.
5. Finish: Stainless steel.
6. Basis of Design:
 - a. GE Appliances; model GDT225SSLSS: www.geappliances.com.
7. Other acceptable manufacturers:
 - a. Frigidaire Home Products: www.frigidaire.com/#sle.
 - b. Whirlpool Corp: www.whirlpool.com/#sle.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.

H. Icemaker, E-04: Undercounter

1. Dimensions:
 - a. Width: 14-1/2 inches.
 - b. Depth: 23-1/2 inches.
 - c. Height: 32-3/8 inches.
2. Ice Capacity:
 - a. Production: 50 lb per day.
 - b. Storage: 25 lb.
3. Features:
 - a. Door Configuration: Overlay.
 - b. Automatic defrost.
 - c. Automatic shutoff.
 - d. Defrost drain with pump.
4. Front Panel: Stainless steel.
5. Basis of Design:
 - a. Summit Appliance Division; BIM44GADA: www.summitappliance.com.
 - b. Other acceptable manufacturers:
 - c. Frigidaire Home Products: www.frigidaire.com/#sle.
 - d. GE Appliances: www.geappliances.com/#sle.
 - e. Whirlpool Corp: www.whirlpool.com/#sle.
 - f. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify utility rough-ins are provided and correctly located.

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3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Anchor built-in equipment in place.

3.3 ADJUSTING

- A. Adjust equipment to provide efficient operation.

3.4 CLEANING

- A. Remove packing materials from equipment and properly discard.
- B. Wash and clean equipment.

END OF SECTION 11 30 13

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SECTION 12 21 13 - HORIZONTAL LOUVER BLINDS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Horizontal slat louver blinds.
- B. Operating hardware.

1.2 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Concealed wood blocking for attachment of headrail brackets.

1.3 REFERENCE STANDARDS

- A. WCMA A100.1 - Standard for Safety of Window Covering Products; 2022.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the placement of concealed blocking to support blinds. See Section 06 10 00.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating physical and dimensional characteristics.
- C. Shop Drawings: Indicate opening sizes, tolerances required, method of attachment, clearances, and operation.
- D. Samples: Submit two samples, 12 inch long illustrating slat materials and finish, cord type and color.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 2. Extra Blind Assemblies: One of each size.
 3. Extra Slats: 20 of each type and size.

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4. Extra Lift Cords, Control Cords, and Wands: One of each type.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Horizontal Louver Blinds Without Side Guides:
 1. Hunter Douglas Architectural; CD
Model: www.hunterdouglasarchitectural.com/#sle.
 2. Levolor; Metal Blinds: www.commercial.levolor.com/#sle.
 3. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Source Limitations: Furnish blinds and associated controls produced by a single manufacturer and obtained from a single supplier.

2.2 BLINDS WITHOUT SIDE GUIDES

- A. Description: Horizontal slat louvers hung from full-width headrail with full-width bottom rail.
- B. Manual Operation: Control of raising and lowering by cord with full range locking; blade angle adjustable by control wand.
- C. Metal Slats: Spring tempered pre-finished aluminum; square slat corners, with manufacturing burrs removed.
 1. Width: 2 inch.
 2. Thickness: 0.008 inch.
 3. Color: As selected by Architect.
- D. Slat Support: Woven polypropylene cord, ladder configuration.
- E. Head Rail: Pre-finished, formed aluminum box, with end caps; internally fitted with hardware, pulleys, and bearings for operation; same depth as width of slats.
 1. Color: Same as slats.
- F. Bottom Rail: Pre-finished, formed steel; with end caps.
 1. Color: Same as headrail.

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- G. Lift Cord: Braided nylon; continuous loop; complying with WCMA A100.1.
 - 1. Free end looped through wall mounted spring tensioned pulley.
 - 2. Color: As selected by Architect.
- H. Control Wand: Extruded hollow plastic; hexagonal shape.
 - 1. Removable type.
 - 2. Length of window opening height less 3 inch.
 - 3. Color: Clear.
- I. Headrail Attachment: Wall brackets.
- J. Accessory Hardware: Type recommended by blind manufacturer.

2.3 FABRICATION

- A. Determine sizes by field measurement.
- B. Fabricate blinds to fit within openings with uniform edge clearance of 3/8 inch.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that openings are ready to receive the work.
- B. Ensure structural blocking and supports are correctly placed. See Section 06 10 00.

3.2 INSTALLATION

- A. Install blinds in accordance with manufacturer's instructions.
- B. Secure in place with flush countersunk fasteners.

3.3 TOLERANCES

- A. Maximum Variation of Gap at Window Opening Perimeter: 1/4 inch.
- B. Maximum Offset From Level: 1/8 inch.

3.4 ADJUSTING

- A. Adjust blinds for smooth operation.

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3.5 CLEANING

- A. Clean blind surfaces just prior to occupancy.
- B. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.

END OF SECTION 12 21 13

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SECTION 230500 - COMMON WORK FOR HVAC

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Project Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 1. Cutting and Patching.
 2. Waterproofing.
 3. Air Plenums.
 4. Electrical Connections.
 5. Accessibility.
 6. Painting.
 7. Equipment Foundations, Supports, Piers, and Attachments.
 8. Equipment Guards and Rails.
 9. Cleaning, Protection and Adjustment.
 10. Special Tools.
 11. Welding.

1.3 CUTTING AND PATCHING

- A. Provide cutting and patching necessary to install the work specified herein. Patching shall match adjacent surfaces. Refer to Division 01 section “Execution” for specific directions.
- B. No structural members shall be cut without prior approval of the Architect.
- C. Provide ceiling removal and replacement where work above ceilings is required. Replace ceiling components damaged in the process.

1.4 WATERPROOFING

- A. Where work pierces waterproofing, including waterproof concrete, the method of installation shall be approved by the Architect prior to performing the work. Furnish necessary sleeves, caulking and flashing required to make openings absolutely watertight.

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1.5 AIR PLENUMS

- A. In plenums which are used as part of an air distribution system as defined by NFPA, materials must be of the type rated for air plenum use. The Contractor shall be responsible to utilize the correct materials in ceiling space used for environmental air purposes.

1.6 ELECTRICAL CONNECTIONS

- A. Regardless of voltage, provide control wiring, interlock wiring, and equipment control wiring for the equipment provided under this division of the specifications.
- B. Furnish electrical disconnect switches, starters and combination starter disconnects required for equipment provided under this division of the specifications. Circuit breakers furnished shall be rated for motor protection.
- C. Power wiring not used for control functions, complete from power source to motor or equipment junction box, including power wiring through starters, shall be provided under Division 26.
- D. Coordinate to ensure that electrical devices furnished or provided are compatible with the electrical systems used.

1.7 ACCESSIBILITY

- A. Coordinate to ensure the sufficiency of the size of shafts, and chases, and the adequacy of clearances in hung ceilings and other areas required for the proper installation of this work.
- B. Locate equipment which must be serviced, operated or maintained in fully accessible positions. Locations in ceilings requiring access shall be coordinated with, but not limited to lights, curtain tracks, speakers, etc. Equipment requiring access shall include, but is not necessarily limited to, valves, traps, clean outs, motors, fire dampers, controllers, switchgear, drain points, etc.
- C. Furnish access doors under this division for installation by General Contractor. Coordinate during bidding phase with General Contractor.
- D. Indicate the locations of access doors for each concealed valve, control, damper, or other device concealed behind finished construction and requiring service on the coordination drawings. Equipment below floor slab or finished grade shall also be indicated on the coordinating drawings.

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1.8 PAINTING

- A. Painting requirements of this section shall conform to Division 01 – Painting.
- B. Provide surface preparation, priming, and final coat application in strict accordance with manufacturer's recommendations.
- C. Provide painting of mechanical items exposed in mechanical equipment room and in occupied spaces. Mechanical items to be painted are as follows:
 - 1. Piping, pipe hangers, pipe insulation, and supports
 - 2. Ductwork, duct insulation.
 - 3. Mechanical equipment and supports.
 - 4. Heat exchangers.
 - 5. Tanks.
 - 6. Accessory items.

1.9 EQUIPMENT FOUNDATIONS, SUPPORTS, PIERS AND ATTACHMENTS

- A. Provide necessary foundations, auxiliary steel, supports, pads, bases and piers required for equipment specified in this division; submit drawings in accordance with Shop Drawing Submittal requirements prior to the purchase, fabrication or construction of same.
- B. Provide 4 inch thick concrete pads for boilers, chillers, compressors, base mounted pumps, rotating equipment, and floor mounted equipment located in equipment rooms and as indicated on drawings. Pads shall be extended 6 inches beyond machine base in each direction with top edge chamfered.
- C. Construction of foundations, supports, and pads where mounted on the floor, shall be of the same materials and same quality of finish as the adjacent and surrounding floor material.
- D. Equipment shall be securely attached to the building structure in an approved manner. Attachments shall be of a strong and durable nature and any attachments that are, in the opinion of the Architect, deemed insufficient shall be replaced as directed, with no additional cost to the Owner.
- E. Equipment located above or in the ceiling shall be supported from the structure above. Weights of all equipment must be coordinated and verified by the contractor before bids are due. Supports and supporting methods shall be included in the bid. No extras will be allowed for heavier than normal equipment.

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1.10 EQUIPMENT GUARDS AND RAILS

- A. Provide readily removable guards or railings for belt drives and rotating machinery. Guards shall consist of heavy angle iron frames, hinged and latched, with heavy galvanized iron crimped mesh wire securely fastened to frames. Railing shall be 1 1/2 inch pipe and railing fittings.
- B. Multiple V-belt drives shall have band belts to minimize vibration.

1.11 CLEANING, PROTECTION AND ADJUSTMENT

- A. Cleaning:
 - 1. General cleaning requirements are specified in Division 01.
 - 2. Upon completion of the work, clean the exterior surface of equipment, accessories, and trim installed. Clean, polish, and leave equipment, accessories, and trim in first-class condition.
- B. Protection of Surfaces:
 - 1. Protect new and existing surfaces from damage during the construction period.
 - 2. Provide plywood or similar material under equipment or materials stored on floors or roofs. Provide protection in areas where construction may damage surfaces.
 - 3. Surfaces damaged during the construction shall be repaired or replaced at the cost of the Contractor at fault. The method of repairing or replacing the surface shall be approved by the Owner and Architect.
- C. Protection of Services:
 - 1. Protect new and existing services from damage during the construction period.
 - 2. Repair, replace and maintain in service any new or existing utilities, facilities or services (underground, overground, interior or exterior) damaged, broken or otherwise rendered inoperative during the course of construction.
 - 3. Services damaged during the construction shall be replaced at the cost of the Contractor at fault. The method used in repairing, replacing or maintaining the services shall be approved by the Owner and Architect.
- D. Protection of Equipment and Materials:
 - 1. Equipment and materials shall be stored in a manner that shall maintain an orderly, clean appearance. If stored on site in open or unprotected areas,

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equipment and material shall be kept off the ground and out of standing water by means of pallets or racks and covered with tarpaulins.

2. Equipment and material, if left unprotected and damaged, shall be repainted or otherwise refurbished at the discretion of the Owner. Equipment and material is subject to rejection and replacement if, in the opinion of the Architect or the manufacturer's engineering department, the equipment has deteriorated or been damaged to the extent that its immediate use or performance is questionable, or that its normal life expectancy has been curtailed.
3. During the construction period, protect ductwork, piping and equipment from damage and dirt. Properly cap ductwork and piping. Each system of piping shall be flushed to remove grit, dirt, sand, and other foreign matter for as long a time as required to thoroughly clean the systems.
4. Provide two (2) complete sets of filters. One set shall be installed just prior to balancing but after cleaning of duct and air handling systems. The second set of filters shall be turned over to Owner for future use. Exception: for HEPA filters, provide only one (1) complete set. HEPA filters shall not be installed until system is turned over to Owner.
5. Should air handling systems be used for temporary heating during construction, provide temporary filters of equivalent efficiencies to those specified in addition to the two (2) permanent sets required above. Temporary filters shall be replaced with additional temporary filters, as required, when the pressure drop is double the initial pressure drop rating of the filter.

E. Adjustment:

1. After the entire installation has been completed, make required adjustments to balancing valves, air vents, automatic controls, circulators, pressure reducing valves and similar devices until performance requirements are met.
2. Provide factory-lubricated bearings for mechanical equipment. Before initial startup of mechanical equipment, inspect and verify bearings for proper amounts of lubricant. If required, provide proper amounts of lubricant in accordance with manufacturer's recommendations.

1.12 SPECIAL TOOLS

- A. Provide the Owner's representative with two (2) sets of special tools required for operation and maintenance of equipment provided.

1.13 WELDING

- A. General Requirements

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1. This paragraph covers the welding of systems. Deviations from applicable codes, approved procedures and approved shop drawings shall not be permitted. Materials or components with welds made off the site shall not be accepted if the welding does not conform to the requirements of this specification. Develop and qualify procedures for welding metals included in the work. Certification testing shall be performed by an approved independent testing laboratory. Bear costs of such testing.
2. Certified welders, previously certified by test, may be accepted for the work without re-certification provided that all of the following conditions are fulfilled:
 - a. Submit copies of welder certification test records in accordance with this Division and Division 01 requirements.
 - b. Testing was performed by an independent testing laboratory.
 - c. The welding procedures and welders are certified in accordance with the "ASME Boiler and Pressure Vessel Code," and base materials, filler materials, electrodes, equipment, and processes conform to the applicable requirements of this specification.
 - d. Certification has been within a one (1) year period from the start of the project.
3. Filler metals, electrodes, fluxes and other welding materials shall be delivered to the site in manufacturers' original packages and stored in a dry space until used. Packages shall be properly labeled and designed to give maximum protection from moisture and to assure safe handling.
4. Submit welding certificates for review. Each welder assigned to work covered by this specification shall be certified by performance tests using equipment, positions, procedures, base metals, and electrodes or bare filler wires.
5. Before assigning welders to the work, provide the architect with their names, together with certification that each individual is certified as specified. No welding work shall start prior to submissions. The certification shall state the type of welding and positions for which each is certified, the code and procedure under which each is certified, date certified, and the firm and individual certifying the certified tests.
6. Each welder shall be assigned an identifying number, letter, or symbol that shall be used to identify his welds. A list of the welders' names and symbol for each shall be submitted. To identify welds, either written records indicating the location of welds made by each welder shall be submitted, or each welder shall apply his mark adjacent to his weld using an approved rubber stamp or felt-tipped marker with permanent, weatherproof ink or other approved methods that do not deform the metal. For seam welds, identification marks shall be placed adjacent to the welds at 3 foot intervals. Identification by die stamps or electric etchers shall be confined to the weld reinforcing crown, preferably in the finished crater.

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PART 2 – PRODUCTS

2.1 ACCESS DOORS

- A. 18 inch x 18 inch access door assembly shall be manufactured as an integral unit, complete with all parts and ready for installation.
- B. Access doors and frames shall be of continuous welded steel construction, unless otherwise indicated. Grind welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of support shown.
- C. Frames shall be fabricated from 16-gauge steel.
 - 1. Fabricate frame with exposed flange nominal 1 inch wide around perimeter of frame for units installed in the following construction:
 - a. Exposed Masonry
 - 2. For gypsum drywall or veneer gypsum plaster, furnish perforated frames with drywall bead.
 - 3. For installation in masonry construction, furnish frames with adjustable metal masonry anchors.
 - 4. For full-bed plaster applications, furnish frames with galvanized expanded metal lath and exposed casing bead, welded to perimeter of frame
- D. Flush Panel Doors shall be fabricated from not less than 14-gauge sheet steel, with concealed spring hinges or concealed continuous piano hinge set to open 175°. Finish with manufacturer's factory-applied prime paint.
 - 1. For fire-rated units, provide manufacturer's standard insulated flush panel/doors, with continuous piano hinge and self-closing mechanism.
- E. Locking devices shall be flush, screwdriver-operated cam locks of number required to hold door in flush, smooth plane when closed.
- F. Manufacturers:
 - 1. Bar-Co., Inc.
 - 2. J. L. Industries
 - 3. Karp Associates, Inc.
 - 4. Nystrom, Inc.

2.2 PIPING WELDING

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- A. Welding materials shall comply with the "ASME Boiler and Pressure Vessel Code." Welding equipment, electrodes, welding wire, and fluxes shall be capable of producing satisfactory welds when used by a certified welder using qualified welding procedures.
- B. Piping ends shall be beveled to 37-1/2°.

PART 3 – EXECUTION

3.1 ACCESS DOORS

- A. Coordinate installation of access doors with the General Contractor. Locations of access shall be submitted, and doors furnished in sufficient time to allow installation in the normal course of the work.

3.2 WELDING

- A. Perform welding in accordance with qualified procedures using certified welders. Welding shall not be done when the quality of the completed weld could be impaired by the prevailing working or weather conditions. Welding of hangers, supports, and plates to structural members shall conform to AWS specifications.
- B. Field bevels and shop bevels shall be by mechanical means or by flame cutting. Where beveling is by flame cutting, thoroughly clean surfaces of scale and oxidation just prior to welding. Beveling shall conform to ANSI B31.1 and AWS B3.0.
- C. Replace and reinspect defective welds. Repairing defective welds by adding weld material over the defect or by peening shall not be permitted. Welders responsible for defective welds must be re-certified.
- D. Store electrodes in a dry heated area, keep free of moisture and dampness during fabrication operations. Discard electrodes that have lost part of their coating.

END OF SECTION 230500

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SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC 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. This Section includes the following hangers and supports for HVAC system piping and equipment:
 1. Pipe hangers and supports.
 2. Equipment supports.

1.3 SUBMITTALS

- A. Provide product data for the following:
 1. Pipe hangers and supports.
- B. Provide fabrication and installation drawings and include load analyses calculations Signed and sealed by a registered professional engineer for the following:
 1. Pipe hangers and supports for piping 8 inches and larger.
 2. Equipment supports.
- C. Welding certificates.

PART 1 - PRODUCTS

1.4 PIPE HANGER AND SUPPORT MANUFACTURERS

- A. Provide supports and hangers for the items included in the work. Hanger design and spacing shall conform to ANSI Code B 31.1.0 for Pressure Piping and the Manufacturers' Standardization Society of the Valve and Fitting Industry (MSS) SP-58 and SP-69, unless supplemented or modified herein.
- B. Manufacturers:
 1. F&S.
 2. F&M.
 3. Grinnell Corp.

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4. Central Iron Mfg.

1.5 PIPE HANGERS AND SUPPORTS - GENERAL

- A. Submit for approval product bulletins with figure numbers of supports, hangers and inserts proposed for the various conditions and services.
- B. Supports shall secure pipes in place, prevent swaying and vibration, maintain required pitch by proper adjustment, and provide free expansion and contraction. Design supports to suit the loading and service, and not over stress the building structure.
- C. Hanger rods shall be threaded 1-1/2 inch on each end or all-threaded cadmium plated or galvanized steel. Hangers, rollers, and supports that are not plated shall be factory painted with a red oxide primer and black enamel finish.
- D. Specified bracket clamp and rod sizes are minimum size. Support and hanger design shall include a safety factor of 5.
- E. Where several pipes 4 inches in diameter and smaller can be installed in parallel at the same level, approved type trapeze hangers may be used in lieu of separate clevis hangers, with suspension rods having double nuts and securely attached to the building structure in an approved manner. Brace trapeze hangers to prevent motion due to expansion and contraction of pipe. Support individual pipes on trapeze by saddles and rollers. For trapeze hanger spacing, use the maximum support spacing listed for the smallest pipe on the trapeze.
- F. Plastic coated hangers and clamps shall be provided for uninsulated brass or copper pipes unless shields are provided between hangers or clamps and uninsulated brass or copper pipes.
- G. Provide supplemental steel required for support of pipes other than steel shown on the structural drawings.
- H. Do not hang one pipe from another pipe, conduit, or ductwork.
- I. Do not use perforated band iron, wire, or chains as pipe hangers.
- J. Support piping as close as practical to heavy load concentrations such as vertical runs, branch connections, valves, and other pipe accessories such as air separators and strainers.
- K. Locate supports adjacent to both sides of control valves or pipe sections shown to be removable.

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- L. Locate supports adjacent to branch shutoff valves to permit removal of branch piping without the installation of temporary supports.
- M. Support piping on at least one side and adjacent to each change in direction.
- N. Provide additional supports as specified elsewhere when grooved pipe construction is employed.
- O. Hangers for insulated pipes shall be sized to clear the outside diameter of the insulation, unless otherwise noted.
- P. Supports and hangers for horizontal piping shall be provided with a means of vertical adjustment after erection. Turnbuckles shall be provided with one lock nut. Rod connections to hangers and attachment devices shall be provided with two (2) nuts.
- Q. Inserts for pipe hangers shall be of a type that does not interfere with structural reinforcing and does not displace excessive amounts of concrete.
- R. Piping located near floors which can be supported from floor or walls shall be provided with approved floor stands, wall brackets, roller supports, masonry piers or similar items.
- S. Resilient hangers and isolation devices shall be provided on piping connected to rotating equipment including pumps and air handling units and on other piping which may vibrate and create audible noise. Refer to this division specification, Vibration and Seismic Controls, for additional requirements concerning vibration isolation at pipe supports.
- T. Additional hangers or supports shall be provided, as required, to stabilize and re-support any existing piping that is to remain and be reused in areas affected by demolition.
- U. Vertical piping shall utilize riser clamps specifically designed for piping.
- V. Pipe Hanger Schedule

Hanger Type	Manufacturers' Model Numbers			
	F&S	F&M	Grinnell	Central Iron
360 shield, split	981	---	---	548
Beam Clamp	55	282	218	39
Multi-J hook blade	120	---	---	208
Clevis hanger	86	239	260	10

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Hanger Type	Manufacturers' Model Numbers			
	F&S	F&M	Grinnell	Central Iron
180 degree shield	980	80	167	550
Rigid trapeze	710	---	Std. 46	551
U-bolt	37	176	137, 137C	98H
Adj. steel pipe stanchion	421	291	259	71
Welded steel bracket	800, 801	151, 155	195, 199	195, 199
Riser clamp	91, 93, 94	241	261, 261C	37, 261
Pipe rest	92, 925	---	---	552
Base elbow support	720, 721	---	---	67, 68
Double bolt pipe clamp	89	261	295	
Welded beam attachment	966	---	66	
Insert	180A, 180B	178	280 Series	100, 101
Cont. slotted insert	150A, 150B	190	---	50
Underground pipe hanger	275	---	---	600A

1.6 PIPE HANGERS AND SUPPORTS – PIPING 6 INCHES AND SMALLER

- A. Piping 6 inches and smaller shall be supported by hangers and supports referred to in MSS-SP69.
- B. High pressure steam and condensate pump discharge piping shall be supported on Type 43 adjustable pipe roller hangers or Type 46 adjustable pipe roller and base supports and Type 39 saddles.
- C. Instrument air piping shall be supported with copper-plated Type 1 clevis hangers or Type 8 riser clamps.
- D. Cold water piping shall be supported with Type 40 protection shields and Type 1 clevis hangers.
- E. All other piping shall be supported by Type 1 adjustable steel clevis hangers.
- F. Hangers for piping with insulation shall be equipped with insulation inserts and protection shields. Support piping in accordance with the insert manufacturer's recommendations.

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- G. Hangers for piping 4 inches and smaller with insulation shall be equipped with Type 40 protection shields. Hot service piping shall be equipped with calcium silicate insulation inserts.
- H. 6 inch cold service piping shall be provided with insulation inserts or oak blocking of square dimension equal to the insulation thickness specified and 12 inches long. In addition, Type 40 protection saddles shall be provided.
- I. 6 inch hot service piping shall be supported on Type 39 protection saddles. Pipe saddles may not be used on piping with insulation requiring a vapor barrier.
- J. Support plastic piping in accordance with the piping system manufacturer’s recommendations for the intended service based on the expected fluid temperatures.
- K. Copper piping shall be supported by copper or plastic clad hangers or shall be protected by plastic non-conducting spacers to prevent dielectric corrosion.
- L. Vertical piping shall be supported at floor levels with Type 8 riser clamps. Piping 2-1/2 inches and larger shall be provided with a minimum of two (2) shear lugs installed in accordance with PFI Standard ES-26. Support locations shall be selected to permit uniform loading, provision for expansion, or to suit space limitations. The riser clamps at exposed locations shall be of such design as to avoid creating a hazardous or unsightly condition and staying within the space limitations.
- M. Pipe guides shall be provided whenever piping has insufficient physical strength to maintain alignment with the force of lineal expansion applied.
- N. The base of piping at circulating pumps shall be Type 52 variable spring base supports or with stanchions. Pipe stanchions shall be a minimum of 1/3 to 1/2 the nominal pipe diameter of the pipe being supported and 1 inch minimum. The base plate shall be a minimum 1/4 inch thick, and its size shall be selected for fastening to the floor with a minimum of two (2) 3/8 inch bolts.
- O. Piping 4 inches and smaller supported from the steel structure shall be supported by Type 23 beam clamps or by inserts and/or expansion bolts in the floor structure above.
- P. 6 inch piping and trapeze hangers where loads in excess of 200 pounds are anticipated shall be supported by Type 22 welded beam attachments.
- Q. Piping along walls shall be supported by Type 33 brackets with drilled horizontal legs for fastening standard hangers and hanger rods, and vertical legs shall be fastened to the wall with at least two (2) fasteners.

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- R. Where several pipes can be installed in parallel at the same level, provide trapeze hangers constructed of uni-strut or steel angle suspended by hanger rods. Brace trapeze hangers to prevent motion due to expansion and contraction of the pipe. Support individual pipes by hangers or rollers.
- S. Support spacing for horizontal steel piping. The support spacing listed below is the maximum normal spacing and does not reduce the need for additional hangers and supports when specified elsewhere.

Steel Pipe Size	Minimum Rod Size	Maximum Support Spacing
1-1/4 inches and smaller	3/8 inch diameter	7' – 0"
1-1/2 inches	3/8 inch diameter	9' – 0"
2 inches	3/8 inch diameter	10' – 0"
2-1/2 inches	1/2 inch diameter	11' – 0"
3 inches	1/2 inch diameter	12' – 0"
4 inches	5/8 inch diameter	14' – 0"
5 inches	5/8 inch diameter	15' – 0"
6 inches	3/4 inch diameter	17' – 0"

- T. Support spacing for horizontal copper piping. The support spacing listed below is the maximum normal spacing and does not reduce the need for additional hangers and supports when specified elsewhere.

Copper Pipe Size	Minimum Rod Size	Maximum Support Spacing
3/4 inch and smaller	3/8 inch diameter	5' – 0"
1 inch	3/8 inch diameter	6' – 0"
1-1/4 inches	3/8 inch diameter	7' – 0"
1-1/2 inches	3/8 inch diameter	8' – 0"
2 inches	3/8 inch diameter	8' – 0"
2-1/2 inches	1/2 inch diameter	9' – 0"
3 inches	1/2 inch diameter	10' – 0"
4 inches	1/2 inch diameter	12' – 0"

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Copper Pipe Size	Minimum Rod Size	Maximum Support Spacing
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- U. Support spacing for horizontal PVC piping. Support spacing listed below is the maximum normal spacing and does not reduce the need for additional hangers and supports when specified elsewhere. Additionally, provide support at every pipe joint.

PVC Pipe Size	Minimum Rod Size	Maximum Support Spacing
3/4 inch and smaller	3/8 inch diameter	5' – 0"
1 inch	3/8 inch diameter	5' – 0"
1-1/4 inches	3/8 inch diameter	5' – 0"
1-1/2 inches	3/8 inch diameter	6' – 0"
2 inches	3/8 inch diameter	6' – 0"
2-1/2 inches	1/2 inch diameter	7' – 0"
3 inches	1/2 inch diameter	7' – 0"
4 inches	1/2 inch diameter	7' – 0"
6 inches	5/8 inch diameter	8' – 0"

- V. NOTE: The above table is based on Schedule 40 PVC not exceeding 100°F service temperature. For other pipe wall thicknesses and service temperatures, consult the manufacturer's published recommendations.

1.7 PIPE HANGERS AND SUPPORTS – PIPING 8 INCHES AND LARGER

- A. Piping 8 inches and larger: Piping 8 inches and larger shall be supported by hangers and supports referred to in MSS-SP69 or shall be designed by a Professional Engineer who is registered in the State of Florida.
- B. Pipe hangers, guides, and anchors shown on the Drawings are partially complete and are shown to establish the basic hanger criteria for type, size and layout. The Contractor shall provide additional hangers, supports, anchors and guides required to complete the work at no additional cost to the Owner.
1. Piping 8 inches and larger shall not be connected to floor slabs or bar joints. These pipes shall be supported directly from the building's steel structure or from miscellaneous structural steel provided by the Contractor.

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- C. Provide the services of a Professional Engineer who is registered in the State of Florida to perform dead load analyses and pipe stress analyses on piping systems where the piping is 8 inches or larger in diameter.
- D. Once final pipe layouts have been established and coordinated with the other disciplines, a set of these drawings shall be forwarded to the Professional Engineer who shall in turn complete his pipe dead load and stress analysis, and shall select and design the pipe hangers, supports and guides. Shop drawings shall then be prepared. Shop drawings shall be stamped by the Professional Engineer with his/her registration seal prior to submission for approval.
- E. When required, pipe supports located in Mechanical Equipment Rooms shall be provided with spring vibration isolation hangers. Additionally, vibration isolation type supports and hangers shall be provided in all vertical mechanical shafts. Refer to this division specification, Vibration and Seismic Controls, for additional requirements.
- F. All high pressure steam, medium pressure steam, low pressure steam, and condensate pump discharge piping shall be supported on Type 46 adjustable pipe roller and base supports or Types 41 or 43 roller hangers complete with Type 39 protection saddles.
- G. Hot water supply and return piping and steam condensate return piping with horizontal movements exceeding 1/2 inch shall be supported with Type 39 protection saddles or with Type 40 protection shields on Type 46 adjustable pipe roller and base supports or Types 41 or 43 roller hangers. Where horizontal movements are less than 1/2 inch use Type 1 clevis hangers or Type 3 pipe clamps.
- H. Chilled water piping shall be supported with Type 40 protection shields and Type 41, 43 or 44 roller hangers where horizontal movements exceed 1/2 inch. Where horizontal movements are less than 1/2 inch, use oak blocking with oversized Type 1 clevis hangers. Insulation inserts or oak blocking shall be of square dimension equal to the insulation thickness specified and 12 inches long. In addition, Type 40 protection saddles shall be provided.
- I. Condenser water piping shall be supported with Type 44 roller hangers, Type 1 clevis hangers or Type 4 pipe clamps.
- J. Pipe guides shall be provided whenever piping has insufficient physical strength to maintain alignment with the force of lineal expansion applied.
- K. Piping supported from the steel structure shall be supported by suitable type beam welding attachments.

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- L. The base of piping at circulating pumps shall be supported by pipe stanchions. Pipe stanchions shall be a minimum of 30 percent of the nominal pipe size of the pipe being supported. The base plate shall be a minimum 1/2 inch thick, and its size shall be selected for fastening to the floor with a minimum of four (4) 1/2 inch bolts.
- M. Piping connections to pressure vessels, such as chillers, boilers, and heat exchangers, shall be supported from overhead in such a manner that no pipe load is exerted on the vessel nozzles.
- N. Vertical piping 8 inches and larger shall be supported at its lowest level by pipe stanchions. Pipe stanchions shall be a minimum of 30 percent of the nominal pipe size of the pipe being supported. It shall be provided with a base plate limiting loading on the structure to 2,000 pounds per square foot. The riser shall be supported on higher levels by riser clamps. Clamps shall be restricted from movement along the pipe by welding a minimum of four (4) shear lugs to the pipe. Refer to PFI Standard ES-26 for the shear lug requirements. Support locations shall be selected to permit uniform loading, provision for expansion or to suit space limitations. The riser clamps at exposed locations shall be of such design as to avoid creating a hazardous or unsightly condition and staying within space limitations.
- O. Support spacing for horizontal steel piping. Support spacing listed below is the maximum normal spacing and does not reduce the need for additional hangers and supports when specified elsewhere.

Steel Pipe Size	Minimum Rod Size	Maximum Support Spacing
8 inches	7/8 inch diameter	19' – 0"
10 inches	7/8 inch diameter	22' – 0"
12 inches	7/8 inch diameter	23' – 0"
14 inches	1 inch diameter	25' – 0"
16 inches	1 inch diameter	27' – 0"
18 inches	1 inch diameter	24' – 0" (see Note below)
20 inches	1-1/4 inch diameter	22' – 0" (see Note below)
24 inches	1-1/4 inch diameter	18' – 0" (see Note below)
30 inches	1-1/2 inch diameter	15' – 0" (see Note below)

1. NOTE: For pipe sizes 18 through 30 inches, the support load requirements exceed the capacity requirements of standard manufactured supports. Therefore, use of larger support spacing is permitted only when custom designed supports are provided.

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- P. Support spacing for horizontal PVC piping. Support spacing listed below is the maximum normal spacing and does not reduce the need for additional hangers and supports when specified elsewhere. Additionally, provide support at every pipe joint.

PVC Pipe Size	Minimum Rod Size	Maximum Support Spacing
8 inches	3/4 inch diameter	8' – 0"
10 inches	3/4 inch diameter	9' – 0"
12 inches	3/4 inch diameter	10' – 0"

NOTE: The above table is based on Schedule 40 PVC not exceeding 100°F service temperature. For other pipe wall thicknesses and service temperatures, consult the manufacturer's published recommendations.

1.8 EQUIPMENT SUPPORTS

- A. Provide welded, shop-fabricated or field-fabricated equipment supports made from structural-steel shapes as required by the contract documents.
- B. Equipment supports shall be capable of supporting the combined operating weight of supported equipment and the connected systems and components.
- C. Provide the services of a Professional Engineer who is registered in the State of Florida to perform analyses for equipment supports provided.

PART 2 – EXECUTION

2.1 HANGERS AND SUPPORT SCHEDULE

Building Construction	Pipe Support Method
Poured concrete floor slabs	Galvanized steel inserts, and/or fishplates of sufficient area to support twice the calculated dead load.
Building structural steel	Beam attachments and similar devices.
Precast concrete floor slabs	Fishplates of sufficient area to support twice the calculated dead load and approve type specialty hanger accessories manufactured for the specific purpose of attaching to precast floors.

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Building Construction	Pipe Support Method
Metal deck floor slabs with concrete fill	Galvanized steel inserts and/or fishplates of sufficient area to support twice the calculated dead load, and approved type specialty hanger accessories manufactured for the specific purpose of attaching to metal deck floors.
Concrete slabs where piping revisions are required and approved after slabs are poured or existing concrete slabs	"Phillips" or "Hilti" expansion bolts and shields for piping 4" and smaller, with main supports welded to structural steel at maximum 20 feet on center 4" x 4" x 3/8" thick clip knee angles with 3/4" expansion bolt in shear (horizontal) and supporting rod at 90° from anchor bolt for piping greater than 4", attached to concrete beams or columns.
Concrete floor slabs on grade with ground water condition	Drainage, waste and vent piping to be encased in slab construction.

2.2 HANGER AND SUPPORT INSTALLATION

- A. Provide hangers and supports with galvanized, metallic coatings for piping and equipment that will not have field-applied finish.
- B. Install hangers and supports to allow controlled thermal movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, loops, and bends.
- C. Provide lateral bracing with pipe hangers and supports to prevent swaying.
- D. Provide building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, 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.
- E. Install hangers and supports so piping loads and stresses from movement will not be transmitted to connected equipment.
- F. Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- G. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

END OF SECTION 230529

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SECTION 230548 - VIBRATION AND SEISMIC CONTROLS

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. Isolation pads.
 2. Isolation mounts.
 3. Restrained elastomeric isolation mounts.
 4. Freestanding and restrained spring isolators.
 5. Housed spring mounts.
 6. Elastomeric hangers.
 7. Spring hangers.
 8. Spring hangers with vertical-limit stops.
 9. Pipe riser resilient supports.
 10. Resilient pipe guides.
 11. Restrained vibration isolation roof-curb rails.
 12. Restraining braces and cables.
 13. Steel and inertia, vibration isolation equipment bases.

1.3 DEFINITIONS

- A. IBC: International Building Code.
- B. ICC-ES: ICC-Evaluation Service.
- C. OSHPD: Office of Statewide Health Planning and Development for the State of California.

1.4 PERFORMANCE REQUIREMENTS

- A. Wind-Restraint Loading:
1. Basic Wind Speed: 160 MPH.
 2. Building Classification Category: II.

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3. Minimum 10 lb/sq. ft. (48.8 kg/sq. m) multiplied by the maximum area of the HVAC component projected on a vertical plane that is normal to the wind direction, and 45 degrees either side of normal.

1.5 SUBMITTALS

- A. Product Data: For the following:
 1. Include rated load, rated deflection, and overload capacity for each vibration isolation device.
 2. Interlocking Snubbers: Include ratings for horizontal, vertical, and combined loads.
- B. Delegated-Design Submittal: For vibration isolation details 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. Design Calculations: Calculate static and dynamic loading due to equipment weight and operation, and wind forces required to select vibration isolators, wind restraints, and for designing vibration isolation bases.
 - a. Coordinate design calculations with wind load calculations required for equipment mounted outdoors. Comply with requirements in other Division 22 Sections for equipment mounted outdoors.
 2. Riser Supports: Include riser diagrams and calculations showing anticipated expansion and contraction at each support point, initial and final loads on building structure, and spring deflection changes. Include certification that riser system has been examined for excessive stress and that none will exist.
 3. Vibration Isolation Base Details: Detail overall dimensions, including anchorages and attachments to structure and to supported equipment. Include auxiliary motor slides and rails, base weights, equipment static loads, power transmission, component misalignment, and cantilever loads.
 4. Wind-Restraint Details:
 - a. Design Analysis: To support selection and arrangement of wind restraints. Include calculations of combined tensile and shear loads.
 - b. Details: Indicate fabrication and arrangement. Detail attachments of restraints to the restrained items and to the structure. Show attachment locations, methods, and spacings. Identify components, list their strengths, and indicate directions and values of forces transmitted to the structure during wind events. Indicate association with vibration isolation devices.
 - c. Coordinate vibration isolation details with wind-restraint details required for equipment mounted outdoors. Comply with requirements in other Division 22 Sections for equipment mounted outdoors.

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d. Preapproval and Evaluation Documentation: By an agency acceptable to authorities having jurisdiction, showing maximum ratings of restraint items and the basis for approval (tests or calculations).

- C. Welding certificates.
- D. Qualification Data: For professional engineer.
- E. Air-Mounting System Performance Certification: Include natural frequency, load, and damping test data.
- F. Field quality-control test reports.
- G. Operation and Maintenance Data: For air-mounting systems to include in operation and maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
- B. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

PART 2 – PRODUCTS

2.1 GENERAL

- A. Mechanical equipment, piping and ductwork shall be provided with, and mounted on, vibration isolators.
- B. The work specified herein shall include providing all labor, tools, equipment, materials, etc., necessary for a complete operational vibration isolation system.
- C. Isolators shall be selected to provide stable starting and stopping, and equipment shall not have excessive movement.
- D. When required to prevent excessive lateral motion due to fan starting, provide a lateral-type thrust restraint isolator. Lateral thrust restraint isolator shall not interfere with horizontal isolation.
- E. Select isolators for not less than the deflections indicated on the schedule. Isolators shall be properly selected for the weights of the mechanical equipment provided.

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F. Isolators located outdoors shall be hot dipped galvanized.

2.2 VIBRATION ISOLATORS

A. Springs

1. Spring isolators shall be freestanding, unhooused, laterally stable steel springs wound from a high-strength spring steel. Springs shall have a lateral stiffness greater than 0.8 times the rated vertical stiffness and shall be designed to provide up to 50 percent overload capacity.
2. Springs shall be selected to provide minimum operating static deflections shown on the vibration isolation schedule below.

B. Elastomer Element

1. The elastomer insert shall be neoprene, molded from oil resistant compounds and shall be color coded to indicate load capacity and selected to operate within its published load range.

C. Hanger Bracket

1. The hanger bracket shall be welded steel and designed to carry a 500 percent overload without failure and to allow a support rod misalignment through a 30° arc without metal-to-metal contact or other short circuit.

2.3 BASES

A. Type 1 - Structural Rail Bases

1. Bases shall be structural beam sections, with welded-on isolator support brackets and pre-located and drilled anchor bolt holes or skids and shall be designed and supplied by the isolation materials manufacturer.
2. Beam sections shall not be structurally connected to each other. Minimum section depth of each member shall be equivalent to 8 percent of the longest span between supporting isolators.
3. Isolator support brackets shall be welded to the structural beams as required to obtain the lowest mounting height for the supported equipment.
4. Product: Peabody Noise Control, Inc., Model SBB; Mason Industries, Model ICS; Amber Booth Custom Fabricated Structural Steel Rail Bases.

B. Type 2 - Integral Structural Rail Bases

1. Bases shall be fabricated from structural beam sections as described above, except that lateral cross members will be added to form a structurally integral, welded frame to provide a rigid, distortion-free common frame to support and anchor separate equipment components or driving and driven members.

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2. Product: Peabody Noise Control, Inc., Model SFB; Mason Industries Model WF; Amber Booth Custom Fabricated Structural Steel Rail Bases.

C. Type 3 - Concrete Inertia Bases

1. Bases shall be constructed of concrete cast into a prefabricated inertia base frame assembly designed and supplied by the isolation materials manufacturer. Concrete shall be cast into base in the field.
2. Frame members shall be welded to form a structurally integral assembly, complete with primer-painted steel perimeter members, welded and tied reinforcing rods, recessed isolator brackets, and equipment anchoring bolts. Bases shall be shipped ready for pouring of concrete fill in the field.
3. Product: Peabody Noise Control, Inc., Model CIB; Mason Industries Model K; Amber Booth Custom Fabricated Structural Steel/Concrete Inertia Bases.

2.4 ROOF CURB

A. Type 4 - Roof Curb Rails

1. Rails to support rooftop equipment shall be designed to provide isolation against the transmission of vibrations to the building structure.
2. Rail assembly shall consist of extruded or roll-formed top and bottom members with spring isolators incorporated and with a continuous air and water seal provided for the entire rail perimeter. Spring isolators shall be selected and spaced according to weight distribution.
3. Spring components shall meet all the specified characteristics described under paragraph 2.1 A of this section.
4. Product: Peabody Noise Control, Inc., Model KSR; Mason Industries Model CMAB; Amber Booth Model RTIR.

2.5 ISOLATORS

A. Type A - Machinery Mounting Pads

1. Pad mounts shall be double ribbed elastomer multiple layer with metal shims between. Pads shall be 65 durometer and designed to permit 120 psi loading. Provide bearing plates to distribute loads.
2. Product: Peabody Noise Control, Inc., Model NGD; Mason Industries Model WSW; Amber Booth Model SP-NR Style E.

B. Type B - Restrained Spring Isolators

1. Vibration isolators for equipment which is subject to load variations and large external or torquing forces shall consist of large diameter laterally stable steel

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springs assembled into formed or welded steel housing assemblies designed to limit vertical movement of the supported equipment.

2. Housing assembly shall be formed or fabricated steel members and shall consist of a top-load plate complete with adjusting and leveling bolts, vertical restraints, isolation washers and a bottom plate with non-skid noise stop pads and holes provided for anchoring to supporting structure.
3. Spring elements shall meet all the specified characteristics described in paragraph 2.1 A of this section.
4. Product: Peabody Noise Control, Inc., Model FLS; Mason Industries Model SLR; Amber Booth Model CT.

C. Type C - Freestanding Isolators

1. Springs shall be assembled between a top and bottom steel load plate. The upper load plate shall be provided with a steel leveling bolt locknut and washer for attachment to the supported equipment. The lower load plate shall have a non-skid noise isolation pad bonded to the bottom and have provisions for bolting the isolator to the supporting structure.
2. Spring elements shall meet all the specified characteristics described in paragraph 2.1 A of this section.
3. Product: Peabody Noise Control, Inc., Model FDS; Mason Industries Model SLF; Amber Booth Model SW.

D. Type D - Neoprene Vibration Isolators

1. Vibration isolators shall be neoprene, molded from oil-resistant compounds, with cast-in-top steel load transfer plate for bolting to supported equipment and a bolt-down plate with holes provided for anchoring to supporting structure. Top and bottom surfaces shall have non-skid ribs.
2. Neoprene vibration isolators shall have minimum operating static deflections as shown on the vibration isolation schedule or as indicated on the project documents but not exceeding published load capabilities.
3. Except where support rails come integral with equipment, provide Type 1 or Type 2 rail bases to distribute the load.
4. Product: Peabody Noise Control, Inc., Model RD; Mason Industries Model ND; Amber Booth Model RV.

2.6 THRUST RESTRAINTS

- A. Thrust restraints will be provided where required to reduce movements associated with fan thrust.

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- B. Spring elements shall meet all the specified characteristics described in paragraph 2.1 A of this section.
- C. Thrust restraints will be provided in sets of two (2).
- D. Product: Peabody Noise Control, Inc., Model HSR; Mason Industries Model WB; Amber Booth Custom Fabricated Thrust Restraints.

2.7 HANGERS

- A. Type E - Neoprene Hanger
 - 1. Vibration isolators with maximum static deflection requirements under the operating load conditions not exceeding .40 inches shall be hangers consisting of an elastomer-in-shear insert encased in a welded steel bracket and provided with a stamped load transfer cap.
 - 2. Elastomer insert shall meet all the specified characteristics described in paragraph 2.1 B of this section.
 - 3. Hanger bracket shall meet all the specified characteristics described in paragraph 2.1 C of this section.
 - 4. Product: Peabody Noise Control, Inc., Model RH; Mason Industries Model HD; Amber Booth Model BRD.
- B. Type F - Spring Hanger
 - 1. Vibration isolators for suspended equipment, with minimum static deflection requirement exceeding .4 inches, shall be hangers consisting of a freestanding, laterally stable steel spring and elastomeric washer in series, assembled in a stamped or welded steel bracket.
 - 2. Hanger bracket shall meet all the specified characteristics described in paragraph 2.1 C of this section.
 - 3. The spring element shall meet all the specified characteristics described in paragraph 2.1 A of this section.
 - 4. Product: Peabody Noise Control, Inc., Model SH; Mason Industries Model PCHS; Amber Booth Model BSW-2
- C. Type G - Combination Neoprene/Spring Hanger
 - 1. Vibration isolators for suspended equipment, where both high and low frequency vibrations are to be isolated, shall be hangers consisting of a laterally stable steel spring in series with an elastomer-in-shear insert, complete with load transfer plates and assembled in a welded steel bracket.

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2. The elastomer-in-shear element shall meet all the specified characteristics described in paragraph 2.1 B of this section.
 3. The spring element shall meet all the specified characteristics described in paragraph 2.1 A of this section.
 4. The welded hanger bracket shall meet all the specified characteristics described in paragraph 2.1 C of this section.
1. Product: Peabody Noise Control, Inc., Model SRH; Mason Industries Model PCDNHS; Amber Booth Model BSWR-2.

D. Additional Requirements for Spring Hangers

1. Springs on hangers for piping and ductwork shall be factory pre-compressed.

2.8 FACTORY FINISHES

- A. Finish: Manufacturer's standard prime coat finish ready for field painting.
- B. Finish: Manufacturer's standard paint applied to factory-assembled and -tested equipment before shipping.
 1. Powder coating on springs and housings.
 2. All hardware shall be galvanized. Hot dip galvanize metal components for exterior use.
 3. Baked enamel or powder coat for metal components on isolators for interior use.
 4. Color-code or otherwise mark vibration isolation and wind-control devices to indicate capacity range.

2.9 EQUIPMENT, PIPING AND DUCTWORK ISOLATION SCHEDULE

- B. Vibration isolation for equipment shall be provided in accordance with the schedule below except as otherwise noted:

ISOLATED EQUIPMENT	EQUIPMENT LOCATION											
	GRADE				20' SPAN				30' SPAN			
	ISOLA-	DEFLEC-			ISOLA-	DEFLEC-			ISOLA-	DEFLEC-		
TOR	TION	BASE	HANGER	TOR	TION	BASE	HANGER	TOR	TION	BASE		

AIR HANDLING UNITS, CABINET FANS, AIR CONDITIONING UNITS^{4,7}

<u>Roof Mounted</u>	--	--	--	--	C	1.00"	4	--	C	1.75"	4
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EQUIPMENT LOCATION

ISOLATED EQUIPMENT	GRADE				20' SPAN				30' SPAN			
	ISOLA-TOR	DEFLEC-TION	BASE	HANGER	ISOLA-TOR	DEFLEC-TION	BASE	HANGER	ISOLA-TOR	DEFLEC-TION	BASE	
<u>Below 15 HP</u>	D	0.25"	--	G	C	1.00"	--	G	C	1.00"	--	
<u>15 HP and Above - 6" Static Pressure & Below</u>												
Less than 301 RPM ⁵	D	0.25"	--	G	C	3.50"	--	G	C	3.50"	3	
301 To 500 RPM	D	0.25"	--	G	C	2.50"	--	G	C	2.50"	3	
Above 500 RPM	D	0.25"	--	G	C	1.75"	--	G	C	1.75"	3	
<u>15 HP and Above – Over 6" Static Pressure</u>												
Less than 301 RPM ⁵	C	0.75"	2*	G	C	3.50"	3	G	C	3.50"	3	
301 to 500 RPM	C	1.00"	2*	G	C	2.50"	3	G	C	2.50"	3	
Above 500 RPM ⁵	C	1.00"	2*	G	C	1.75"	3	G	C	1.75"	3	
<u>AXIAL AND TUBULAR CENTRIFUGAL FANS^{4,7}</u>												
<u>22" and Below Wheel Diameter</u>												
	D	0.25"	--	G	C	1.00"	--	G	C	1.00"	--	
<u>24" and Above Wheel Diameter - 2" Static Pressure and Below</u>												
Less than 301 RPM ⁵	C	2.50"	2*	G	C	3.50"	3	G	C	3.50"	3	
301 to 500 RPM	C	1.00"	2*	G	C	1.75"	2*	G	C	2.50"	3	
Above 500 RPM	C	1.00"	2*	G	C	1.75"	2*	G	C	1.75"	2*	
<u>24" and Above Wheel Diameter - Over 2" Static Pressure</u>												
Less than 301 RPM ⁵	C	2.50"	3	G	C	3.50"	3	G	C	3.50"	3	
301 to 500 RPM	C	1.75"	3	G	C	1.75"	3	G	C	2.50"	3	
Above 500 RPM	C	1.00"	3	G	C	1.75"	3	G	C	1.75"	3	
<u>CENTRIFUGAL FANS AND UTILITY SETS⁷</u>												
<u>22" and Below Wheel Diameter</u>												
50 HP and Below	D	0.25"	2*	G	C	1.00"	2*	G	C	1.00"	2*	
Above 50 HP	C	1.75"	3	G	C	1.75"	3	G	C	1.75"	3	

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EQUIPMENT LOCATION											
ISOLATED EQUIPMENT	GRADE			20' SPAN			30' SPAN			BASE	
	ISOLA-TOR	DEFLEC-TION	BASE HANGER	ISOLA-TOR	DEFLEC-TION	BASE HANGER	ISOLA-TOR	DEFLEC-TION	BASE HANGER		
<u>24" and Above - 50 HP and Below</u>											
Less than 301 RPM ⁵	C	2.50"	2*	G	C	3.50"	2*	G	C	3.50"	2*
301 to 500 RPM	C	1.75"	2*	G	C	1.75"	2*	G	C	2.50"	2*
Above 500 RPM	C	1.00"	2*	G	C	1.00"	2*	G	C	1.00"	2*
<u>24" and Above – Above 50 HP</u>											
Less than 301 RPM ⁵	C	2.50"	3	G	C	3.50"	3	G	C	3.50"	3
301 to 500 RPM	C	1.75"	3	G	C	1.75"	3	G	C	2.50"	3
Above 500 RPM	C	1.00"	3	G	C	1.75"	3	G	C	1.75"	3

* = Base 1 may be substituted for Base 2 provided isolated equipment is rigid and will resist torquing.

Notes:

- 1 Provide Type 1, 2 or 3 Base if required to stabilize supported equipment.
 - 2 Provide 12" thick Type 3 Base for pumps over 75 HP.
 - 3 Provide Type 3 Base large enough to provide elbow support for piping.
 - 4 Provide Type 1 or 2 Base if required to support equipment properly.
 - 5 Isolator natural frequency shall be 40 percent of the lowest equipment operating speed.
 - 6 Provide Type 3 Base weighing 10 times maximum equipment unbalanced forces.
 - 7 Provide thrust restraints for equipment scheduled to operate over 2" static pressure.
 - 8 Provide external vibration isolation on air handling units when factory supplied internal isolation is unavailable.
- A. Noise and vibration isolator types and minimum operating static deflections for suspended or floor-mounted piping shall be as follows:
1. Type E, Type F and Type G hangers, or Type A and Type C floor mounts, with minimum operating static deflections equivalent to 50 percent of connected equipment isolator deflection shall be used to support all piping over 1 inch outside diameter located within mechanical equipment rooms and for a minimum of 50 feet, whichever is greater, from connections to vibration isolated mechanical or electrical equipment. Above requirement shall include pressure reducing stations.

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2. For suspended piping, Type E or Type F, except first five hanger points connected to isolated equipment shall be Type G.
 3. For floor-mounted piping, Type C isolator for the first five support points, then Type A isolator.
 4. All piping connected to fire pumps and sprinkler systems do not require isolation. Do not isolate anchor points or bases for pipe risers.
- B. Noise and vibration isolator types and minimum operating static deflections for suspended or floor-mounted sheet metal ductwork, air plenums, pressure reducing valves, sound traps and similar air distribution elements shall be as follows:
1. Type G hangers, or Type C floor mounts with minimum operating static deflections equivalent to 50 percent of connected equipment isolator deflection, or 1 inch, whichever is greater, shall be used to support all sheet metal air distribution elements located within mechanical equipment rooms and for a minimum of 50 feet from connections to vibration isolation mechanical equipment.
- C. Isolator types are scheduled to establish minimum standards. Labor saving accessories can be an integral part of isolators supplied to provide initial lift of equipment to operating height, hold piping at fixed elevations during installation and initial system filling operations, and similar installation advantages, provided isolators supplied incorporate the specified isolator type and do not degrade the noise and vibration isolation of equipment mounted.
- D. Specified supplemental equipment base types can be deleted for unitary packaged air handling equipment having a rigid frame and casing providing a distortion-free platform for attachment of vibration isolators.
- E. Provide flexible connections on all ductwork connected to isolated equipment. Neoprene rubber flexible connection and mounting flange shall have a pressure rating 20 percent greater than duct system pressure.
- F. Provide flexible connections on all piping connected to isolated equipment. Provide control rods with neoprene sleeves and neoprene washers to eliminate metal-to-metal contacts. Connector pressure rating shall be 20 percent greater than system pressure rating. On rotating equipment, provide flexible connections parallel to the rotating shaft.
1. Product: Metraflex Metrasphere; Mason Industries Model MFNC; Keyflex Model 1512; Hyspan Series 5500.

PART 3 – EXECUTION

3.1 EXAMINATION

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- A. Examine areas and equipment to receive vibration isolation and wind-control devices for compliance with requirements for installation tolerances and other conditions affecting performance.
- 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 APPLICATIONS

- A. Multiple Pipe Supports: Secure pipes to trapeze member with clamps approved for application by an agency acceptable to authorities having jurisdiction.
- B. Hanger Rod Stiffeners: Install hanger rod stiffeners where indicated or scheduled on Drawings to receive them.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static within specified loading limits.

3.3 VIBRATION-CONTROL DEVICE INSTALLATION

- A. Comply with requirements in Division 01 Section "Roof Accessories" for installation of roof curbs, equipment supports, and roof penetrations.
- B. Equipment Restraints:
 - 1. Install resilient bolt isolation washers on equipment anchor bolts where clearance between anchor and adjacent surface exceeds 0.125 inch (3.2 mm).
- C. Piping Restraints:
 - 1. Comply with requirements in MSS SP-127.
 - 2. Space lateral supports a maximum of 40 feet (12 m) o.c., and longitudinal supports a maximum of 80 feet (24 m) o.c.
 - 3. Brace a change of direction longer than 12 feet (3.7 m).
- D. Install cables so they do not bend across edges of adjacent equipment or building structure.
- E. Install bushing assemblies for anchor bolts for floor-mounted equipment, arranged to provide resilient media between anchor bolt and mounting hole in concrete base.

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- F. Install bushing assemblies for mounting bolts for wall-mounted equipment, arranged to provide resilient media where equipment or equipment-mounting channels are attached to wall.
- G. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.
- H. Drilled-in Anchors:
 - 1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
 - 2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
 - 3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
 - 4. Adhesive Anchors: Clean holes to remove loose material and drilling dust prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
 - 5. Set anchors to manufacturer's recommended torque, using a torque wrench.
 - 6. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications.

3.4 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. Provide evidence of recent calibration of test equipment by a testing agency acceptable to authorities having jurisdiction.
 - 2. Schedule test with Owner, through Architect, before connecting anchorage device to restrained component (unless post connection testing has been approved), and with at least seven days' advance notice.
 - 3. Obtain Architect's approval before transmitting test loads to structure. Provide temporary load-spreading members.

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4. Test at least four of each type and size of installed anchors and fasteners selected by Architect.
 5. Test to 90 percent of rated proof load of device.
 6. Measure isolator restraint clearance.
 7. Measure isolator deflection.
 8. Verify snubber minimum clearances.
 9. Air-Mounting System Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 10. Air-Mounting System Operational Test: Test the compressed-air leveling system.
 11. Test and adjust air-mounting system controls and safeties.
 12. If a device fails test, modify all installations of same type and retest until satisfactory results are achieved.
- D. Remove and replace malfunctioning units and retest as specified above.
- E. Prepare test and inspection reports.

3.5 ADJUSTING

- A. Adjust isolators after piping system is at operating weight.
- B. Adjust limit stops on restrained spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.
 1. Adjust active height of spring isolators.
- C. Adjust restraints to permit free movement of equipment within normal mode of operation.

END OF SECTION 230548

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SECTION 230900 - INSTRUMENTATION AND CONTROL FOR HVAC

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Project Conditions and Division 01 Specification Sections, apply to this Section.

1.2 INTRODUCTION

A. Overview

1. This document contains the specification for a Direct Digital Control (DDC) system, also commonly termed the Building Automation Control System (BACS).
2. The Building Automation Control System (BACS) is configured as a network with control functions at multiple levels, and with multiple points of operator control and supervision. The BACS includes centralized head-end computers, the Energy Management and Controls Systems (ECMS) workstations, data transmission systems, field panels and controllers, necessary interfacing controls, sensors and actuators. The controllers contain microprocessors and other supporting electronics that perform local control functions and execute application programs without requiring communications with the centralized head-end computers or workstations.

B. Instructions to Bidders

1. Base Bid – Include all work as described in the specification and drawings.

- C. It is the Owner's requirement that the DDC System Suppliers will bid all parts of the project. Failure to bid on any part of the project may result in bid being rejected.

- D. This document lists the requirements for the procurement of a DDC system for the entire project.

1. The DDC System Supplier will have a contract directly with the Mechanical Contractor.

E. Approved DDC System Suppliers

1. Trane
2. Johnsons Controls
3. Owner Approved Equal

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1.3 STIPULATIONS

- A. Applicable requirements of the General Conditions and special requirements and Division 1 are part of this section and shall have the same force and effect as if printed here within full.
- B. In case of conflict between various requirements, the most stringent requirement shall apply.
- C. The complete construction documents package for the work that is included in this project's work is being provided. It is the bidder's responsibility to ensure that they have indeed received all of the documents as listed in this specification.

1.4 PURPOSE OF THIS DOCUMENT

- A. The purpose of this document is to obtain a lump sum price for the project.
- B. The technical requirements for the DDC System are generally included in this document. Failure by the bidder to adhere to these requirements may result in their bid being rejected.
- C. It is to be understood that the Owner is generally looking for the system as listed in this document. Any deliberate attempt by the bidders to "cheapen" the system by extensive use of unitary controllers on large equipment (air handling units, heat exchangers, etc.) may render the bid as invalid.
- D. The Owners and Engineers, at their discretion, may ask for further information and/or clarification from the DDC supplier. Any written communication between the DDC System Suppliers and the Owner and/or Architect/Engineer may be included as part of the final contract between the Owner and the DDC System Supplier.
- E. If DDC system improvements occur between the time the of the existing installation and the time the Bid Documents are issued, and if these improvements require significant changes in the proposed system architecture, the Owner must approve such changes before the submission of the bids. Any system improvements or enhancements must be presented to the owner, whether the intent is to use the enhanced systems on this project or not.
- F. It is to be understood that the Owners are not obligated to accept the bid and the Owners reserve the right to reject the bid without explanation.
- G. All costs incurred by the DDC System Suppliers and their representatives for the preparation of the bid is their own responsibility. The Owner is not responsible for any of these costs.

1.5 REQUIREMENTS FOR SUBMITTING BIDS

- A. The bids must provide complete details for all equipment proposed sensors, hardware, software, and other equipment as specified. The material shall be carefully organized so that an accurate evaluation can be made.

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- B. The schematic system layout shall show complete system architecture, including all digital control panels (DCPs) required. (It is to be noted that the installation drawings should show enough details so that an installation contractor can provide the wiring and labeling.) Show location of all DCPs, UCs, operator devices, etc. (This is to include the existing controller and workstation.)

1.6 DESCRIPTION OF PROJECT SITE

- A. Refer to General Conditions

1.7 ABBREVIATIONS

- A. Below is a list of abbreviations related to this project:

ACP	Apparatus Control Panel
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers
AI	Analog Input
ANSI	American National Standards Institute
AO	Analog Output
ASME	American Society of Mechanical Engineers
AWG	American Wire Gauge
BI	Binary Input
BO	Binary Output
CFM	Cubic Feet per Minute
CPU	Central Processing Unit
CRT	Cathode Ray Tube
DCP	Digital Control Panel
DDC	Direct Digital Control
DE	Data Environment
DI	Digital Input
DO	Digital Output
DP	Differential Pressure
DPDT	Double Pole Double Throw
DPST	Double Pole Single Throw
DTC	Data Terminal Cabinets
EA	Exhaust Air
EIA	Electronic Industries Association
EMT	Electrical Metallic Tubing
EMS	Energy Management System
E/P	Electric/Pneumatic Transducer
EPROM	Erasable Programmable Read Only Memory
FCC	Federal Communication Commission

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FPM	Feet per Minute
FV	Face Velocity
GPM	Gallons per Minute
HVAC	Heating, Ventilation and Air Conditioning
I&C	Instrumentation and Control
I/O	Input/Output
I/P	Current to Pneumatic
IEEE	Institute of Electrical and Electronic Engineers
ISA	Instrument Society of America
kWH	Kilowatt Hours
LAN	Local Area Network
MFA	Master Fire Alarm
N.C.	Normally Closed
NIP	Network Interface Panels
N.O.	Normally Open
NEC	National Electrical Code
OA	Outdoor Air
PDL	Peak Demand Limiting
P/E	Pneumatic/Electric
PLC	Power Line Conditioner
PUP	Non-Proprietary Public Unitary Protocol
PROM	Programmable Read Only Memory
RA	Return Air
RAM	Random Access memory
RH	Relative Humidity
RTC	Real Time Clock
RTD	Resistance Temperature Detector
SA	Supply Air
SWH	Service Water Heating
SPDT	Single Pole Double Throw
SPST	Single Pole Single Throw
TBG	Time Base Generator
UCP	Unitary Control Panel (also called application specific controllers or UC Controllers)
UL	Underwriter's Laboratory
VAV	Variable Air Volume

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1.8 DEFINITIONS

A. Terms

1. (adj): This acronym is used for the word “adjustable”. It is used in conjunction with the definition of an application parameter that resides in a Building Controller, Advanced Application Controller or Application Specific Device. Example: The hot water set point shall vary as a function of the outside air temperature. When the outside air temperature is 0 F (adj), the hot water set point shall be 180 F (adj). When the outside air temperature is 60 F (adj), the hot water set point shall be 100 F (adj). In this example, four variables have been defined as adjustable. When so defined, these variables must be exposed to the field bus as BACnet objects for viewing by a BACnet OWS.
2. Actuator: Control device to provide motion of a valve or damper in response to a control signal.
3. A/D Converter Resolution: The resolution of an analog to digital converter is the voltage range of the A/D divided by 2 to the X power where X is the number of bits for the A/D converter.
4. Advanced Application Controller: A controller with provisions for all of the physical inputs and physical outputs associated with a single mechanical component such as a terminal unit, air-handling unit, chiller or boiler. The controller shall also have embedded in it all of the control logic that is associated with the physical inputs to the physical outputs. A process controller may or may not have data management features such as time schedules, trend data storage and alarm message generation capabilities. These features may be provided by the Building Controller.
5. Analog Input (AI): A continuously varying voltage or amperage signal that is varied by a sensor in relation to a sensed variable. This signal is processed in the controller after an analog-to-digital converter on the controller that converts the analog signal to a digital value.
6. Alarm Handling: The process by which the existence of an alarm condition results in the dispatch of an editable message to one or more operator workstations.
7. Algorithm Execution Sample Rate: How often a mathematical algorithm in a controller generates a new output value.
8. Analog: Continuously variable state over a stated range of values.
9. Analog Calibration Offsets: For all analog input measured variables, there is a requirement to adjust the value measured by the hardware based analog input point to match the value reported by a certified test instrument. An analog calibration offset is a parameter that can be added or subtracted from the raw value measured by the sensor to produce a calibrated value that will be use by the control logic and reported to the operator workstations. The initial value of this parameter is set at zero and it is adjusted when the calibration process is executed. This adjustment is referred to as a single point calibration. These offset values are configuration parameters and as such shall be written to EEPROM. It shall be possible to change the value of these parameters without re-downloading the program to the controller.

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10. Analog Output (AO): A continuously varying voltage or amperage signal that is generated from the controller after digital-to-analog conversion. The voltage or amperage signal will be used, for instance, to drive a modulating actuator or reset a hardwired setpoint on a packaged device.
11. Application Programming Tool (APT): A software tool used to create control logic for use in a Building Controller or Advanced Application Controller (Process Controller or Supervisory Logic Controller). Application programming tools are unique to each vendor. Example: The Honeywell application programming tool cannot be used to create an application for downloading to a TAC programmable process controller. The use of open protocols does not impact this definition.
12. Application Specific Controller (ASC): A subset of application specific devices (ASD).
13. Application Specific Device (ASD): A sensor, controller, or end device that is pre-programmed by the vendor. It may have physical inputs and physical outputs. The control logic, while not programmable, may be configurable through the use of configuration parameters. The application may require input network variables and may send output network variables onto the network.
14. Approve: The term "approved," where used in conjunction with the Engineer's action on the Contractor's submittals, applications, and requests, is limited to the Engineer's duties and responsibilities as stated in the Conditions of the Contract. Such "approval" does not release the General Contractor from the responsibility to fulfill the Contract Document requirements.
15. Approved equal: to be defined in the specification.
16. Archive: Long term storage of historical data. Archived data may be on the hard drive or relocated to disk or tape.
17. ATS: Automatic Time Schedules. Automatic time schedule software measures time and executes start and stop commands based on operator created requirements that are based on the day of the week or the date.
18. Analog Value (AV): A network-visible analog point whose value is determined by a controller computation.
19. AWG: American Wire Gauge – Standard trade sizes of conductors
20. B-AAC: BACnet Advanced Application Controller
21. B-ASC: BACnet Application Specific Controller
22. B-BC: BACnet Building Controller
23. Binary Input (BI): An on/off indication that has a maximum cycle rate of 1 Hz. This is typically sensing a contact closure.
24. Binary Output (BO): A contact closure on the controller that will cause an action in the system.
25. Binary Value (BV): A network-visible binary point whose value is determined by a controller computation.

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26. B-OWS: BACnet Operators Workstation
27. B-SA: BACnet Smart Actuator
28. B-SS: BACnet Smart Sensor
29. BACnet: Building Automation and Control Networks
30. BIBBS: BACnet Interoperability Building Blocks
31. Broadcasting: The propagation of data from a device to the control network. Software objects that broadcast data to the network may include the following parameters:
32. Send on Delta: An adjustable parameter that defines a requirement to broadcast when the data generated by the software object changes by an amount that exceeds this parameter's value. For binary data, this parameter defaults to a change of state. The broadcast of data is initiated when this criteria and the minimum send time requirement have been met. Also referred to as a "Change of Value".
33. Minimum Send Time: An adjustable parameter that defines a mandatory time period during which no broadcasting of data will occur. Once this time period has been exceeded without a broadcast, the send on delta parameter or the maximum send time parameter shall determine when a broadcast is initiated.
34. Maximum Send Time: An adjustable parameter that defines the maximum time period between broadcasts of a software object's data to the network. Should the value of a software object remain constant over an extended period of time, the value will be rebroadcast once every maximum time period.
35. Building Controller: A device that includes IP to Field Bus router, automatic time scheduling, trend logging, alarm handling, and supervisory logic control functionality. Sometimes referred to as a BACnet Building Controller or B-BC.
36. Building Project Manager: is the Owner's manager for the particular building project.
37. Bus Topology: A term used to describe the sequential connection of devices on a LON segment. The communication cable runs from device to device with no tees or stubs from the main communication cable to a device. Also referred to as daisy chain wiring.
38. CAT: Category 5 Cable or Category 6 Cable – is an ANSI/EIA Standard 568 that specifies categories of twisted pair cabling systems (wire, junctions, and connectors) in terms of the data rates that they can sustain.
39. CFM: Cubic Feet per Minutes
40. Concurrent Personnel Training: is to mean adding one more trainee to the number of trainees specified. This trainee will be assumed to be added to the same training class as specified.
41. Configuration Parameter: An input variable to a device that is written to EEPROM. Configuration parameters can be changed from the OWS periodically but are not changed routinely as a function of control logic.
42. Control Room: the central station for the DDC system. This room shall also mean central control station, or central control center.

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43. Coordination: the DDC System Supplier shall meet with the Engineer and Owner during the design stages of each building to coordinate the work of the DDC System installation
44. Data Server: A personal computer with a Microsoft's Sequel database for the storage of historical data. The historical data is sent to the data server by the system servers.
45. Data Storm: A data storm is the uncontrolled transmission of data from a controller to the network. It can consume bandwidth and prevent necessary data from getting through. It is typically caused by poorly written applications that do not use event driven communication with minimum send times, send on delta (change of value), and maximum send time parameters.
46. Data Terminal Cabinets: this is a slave or extender panel to the DCP. This panel usually does not operate without being connected to the DCP.
47. Dead Zone: With respect the performance of a PID algorithm, the dead zone is the range of an input variable to the PID above and below the set point for which the output of the PID algorithm shall not be changed. Once the input variable gets within the dead zone, it is fruitless to attempt changes to get the input variable any closer to the set point. Assigning a dead zone to a PID loop improves stability and reduces wear and tear on the actuator.
48. DDC System Installer: the contractor who is to install all equipment, which is furnished by the specification. The DDC System Installer will provide all wiring and conduit which are required by the specification unless otherwise noted.
49. DDC System Manufacturer: this term shall mean the same as DDC System Supplier and vice versa.
50. DDC System Project Manager: is the main contact person who is employed by the DDC System Supplier and is responsible for all DDC matters concerning this project.
51. DDC System Supplier: the contractor who is to furnish all equipment required by the specification.
52. DI: Digital Input. Also referred to as a binary input or discrete input.
53. Digital Control Panel: this is the highest level of equipment that is connected directly to the high speed local area network. The DCP may or may not have I/Os connected to it. (DCP is also referred to as NIP on the Construction Documents.)
54. Directed: Terms such as "directed," "requested," "authorized," "selected," "required," and "permitted" mean "directed by the Engineer," "requested by the Engineer," and similar phrases. However, no implied meaning shall be interpreted to extend the Engineer's responsibility into the Contractor's area of construction supervision.
55. Discrete: Binary or digital state
56. DO: Digital Output. Also referred to as a binary output or discrete output.
57. Drift: When a sensor calibration is checked after a defined period of time (typically one year), the difference between the reported value and the measured value is defined as the drift. This measurement assumes that the sensor was calibrated at the beginning of the time period. If the measurement at the end of the time period is at a different value than the

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measurement at the beginning of the time period, an allowance for the conformity rating must be included.

58. Dynamic Data: Data in a field level device that periodically changes values due to the measurements from the physical environment or the execution of control logic.
59. EEPROM: Electrically Erasable Programmable Read-Only Memory (ROM) that can be erased and reprogrammed (written to) repeatedly through the application of higher than normal electrical voltage.
60. Electronic Signature: Electronic signature is a feature that supports certification under 21 CFR Part 11. When an operator that is signed onto a system takes an action such as changing a set point, the system requires the user name, password and a documented reason for the action before the action is allowed to take effect.
61. Enforced Acknowledged Response: When an alarm is acknowledged, the entry of the cause of the alarm, action taken to resolve the alarm state, and additional comments are required.
62. Engineer or Architect: the Project Engineer for various projects. For the DDC System project, the Engineer shall be Burt Hill. The term "Architect" shall be deemed to mean "Engineer" unless otherwise noted. The Engineer will be responsible for all work which is in design. It may be necessary for the DDC System Supplier to coordinate with the Engineer's subcontractors during design and construction.
63. Event Driven Communication: A term used to describe the propagation of data from a device to the network based on broadcasting rather than polling. The send on delta (change of value) parameter is used to define the event and the data propagation is further controlled by the minimum and maximum send time parameters.
64. Existing: "Existing" equipment or devices shall remain in service unless otherwise noted. All equipment that is not indicated as being existing shall be new.
65. FC: Failed close position of a control device or actuator. The device shall move to the closed position on a loss of the control signal or energy source.
66. Firmware: There are two types of software associated with a hardware device. The first element of software provides the underlying core functionality of the device. The second element is the application program that allows the device to execute a specific sequence of control. The first core element is typically revision sensitive and may be updated from time to time by the vendor to improve performance. This first element of software is called firmware.
67. Floating Control: Floating control is a control loop algorithm used for fast responding airside and waterside pressure and flow control loops. Defining a set point and a neutral zone creates a "floating" analog zone in units of the process variable. The neutral zone is split half above the set point and half below the set point. Whenever the process variable is within the "floating" zone, the actuator is left unchanged (stationary for tri-state actuators and at the current percent stroke for analog devices). The process variable is measured and the algorithm executed once for each sample rate. For tri-state devices, the sample rate is always 1 second. For analog devices, the sample rate will vary from 2 to 10 seconds (a tuning requirement). During the execution of the algorithm, if the process variable is above or

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- below the “floating” zone, the instructions to the end device are changed. For tri-state devices they are put into motion. For analog devices, their percent stroke signal is either increased or decreased by a set amount (called the bump rate). One sample rate later the process is repeated. If the process variable has returned to within the “floating zone,” a tri-state actuator is instructed to cease motion and an analog device will hold at the new percent signal sent on the last sample. If the process variable remains outside the “floating” zone, a tri-state device will continue in motion and an analog device will receive another “bump”. With pressure based control loops, it is usually required to set the position of the control device to a fixed level for a period of time when the system is started. This will preclude a pressure spike in the first few minutes of operation. This is not required for flow control loops.
68. Flyover: When the linking object is “transparent”, information about the link is viewable only when the operator moves the pointer over the transparent linking object. This process is called a “flyover”. A transparent linking object might be placed over a bitmap picture of a piece of equipment. When the operator moves the pointer over the picture of the piece of equipment the link is viewable and clicking on the link takes the operator to the graphic page for the piece of equipment.
 69. Free Topology: A data wiring topology supported by LON that allows for loops, tees, y-connections, etc. When this topology is used, only one terminator of a specific design is required, and allowable cable lengths are significantly reduced. Guidelines on the application of this concept are available from Echelon.com.
 70. Furnish: The term "furnish" is used to mean "supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."
 71. Gain: A term used with proportional control. Gain is 100 divided by the specified throttling range. See also the definition for throttling range. This term is sometimes referred to as the proportional gain.
 72. Graphic Page: A graphic page is a visual presentation in the operator workstation that allows the operator to view a collection of data in an organized manner. The data on a single view can come from multiple field devices. The data can be organized in a table format within the view. The data can be displayed on a visual representation of a mechanical system. Both visual equipment displays and columns of data can be displayed on single view. Links to other graphical pages can be displayed. Links to IP addresses can be displayed on a graphic page. A graphic page can be static such as a site map or picture with no dynamic data only links to other graphic pages.
 73. Graphical Programming: Graphical programming is a concept where mathematical and logical algorithms are represented by graphical objects. Control logic is laid out by placing objects on a palate and connecting the output of one object to the input of the next object. Once completed, the object oriented diagram is compiled and checked for errors, and when all errors have been eliminated, the program can be downloaded to a controller.
 74. General: Basic Contract definitions are included in the Conditions of the Contract.
 75. Primary Care Health Services, Inc.: also referred to as the Owner.

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76. High Volume Accumulator: Given the physical difficulty in measuring the static pressure of the outside air, the static pressure sensor is installed in a fabricated device that is made of a section of PVC piping. The pipe has multiple holes drilled in it to allow the interior of the pipe section to represent the static pressure without the effects of wind pressures. The sensor is installed in one end and the holes are drilled at all angles near the opposite end of the pipe. Both ends are capped.
77. Historical Trend Data: Trend data is a collection of values from a specific variable in a field bus level device such as the mixed air temperature on an air-handling unit. The collection of this data may be accomplished whenever the AHU is operating and then once every five minutes. This collected data is then stored in a database on a data collection computer. Once the data is removed from the device and placed in the database, it is considered to be Historical Trend Data.
78. HOA: Hand-Off-Auto
79. HVAC: Heating, Ventilating and Air Conditioning
80. HZ: Hertz, a unit of frequency. It is synonymous with cycles per second.
81. I/O: Input and Output
82. IEEE: Institute of Electrical and Electronics Engineers
83. Inch-Pound Units: A system of units used in the United States as contrasted with the SI system of units. See the ASHRAE Handbook of Fundamentals for a complete list of engineering units under this system of units.
84. Indicated: The term "indicated" refers to graphic representations, notes or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used, it is to help the reader locate the reference; no limitation on location is intended.
85. Inhibit Alarms: To inhibit an alarm is to stop the transmission of the alarm message to the OWS. This may be done on chilled water plant during the winter or during major maintenance on a system when the alarms no longer have any real significance. Also referred to as disabled alarms.
86. Initial Value (IV): An initial setting for a parameter that can subsequently be changed by the operator without re-compiling and downloading the program.
87. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations."
88. Instance Number: A unique number in the range of 0 to 4,194,302 assigned to each device in a BACnet system. A conflict in the instance number between two devices can be problematic. This is part of the BACnet addressing scheme for devices.
89. Internetwork: A set of two or more BACnet networks interconnected by routers.

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90. Interstitial Space: The space above a ceiling and below the above floor. Ductwork, piping and electrical cables are typically run in this space.
91. ISA: Instrumentation, System and Automation Society
92. Key Contact: a person designated by the Owner to closely work with the DDC System Supplier. This person may eventually administer the DDC system at the Owner's facility.
93. Labor: in the Bid Form, labor by the DDC System Supplier shall include all engineering, custom software programming, submittals, coordination, supervision, checkout, start-up, testing, service and maintenance, and warranty services. It will include all work, training and administrative tasks required by the specifications.
94. Latch: A term used in describing control logic where a state change by a binary variable causes another point in the logic to change states and remain at the new state even though the initiating variable reverts to its original state. Latching functions include a reset function that allows the latched variable to revert to its original state when the reset input is toggled.
95. Later Personnel Training: is to mean that one additional trainee is to be trained by special arrangement, outside of the regular schedule of training as specified.
96. Line Programming: Line programming based application programming tools use line code that is similar to FORTRAN, Basic or C+ programming. Master programs and subroutines are created to meet a sequence of control. The program is then compiled and downloaded to a controller.
97. Links: A link is a mechanism by which the system operator can change the operator workstation view from one part of the system to another part of the system or from one graphic page display to another graphic page display.
98. Local Area Network (LAN): means the network which connects all of the DCPs. The operator controls may also be connected to LAN. This network is usually an industry standard network such as Arcnet or Ethernet.
99. Logic Generated Application Parameter: An application parameter for a control process that is generated by secondary or supporting logic. Example: A proportional plus integral (PI) control loop is used to control a chilled water coil in an Air Handling Unit. The process variable is the discharge air temperature. The set point for the PI control loop is a function of the maximum terminal load from all of the terminals being supported by the AHU. The PI control loop set point is a Logic Generated Application Parameter. If in the sequence of control, a Logic Generated Application Parameter is appended with (rpt), the value of the Logic Generated Application Parameter shall be an output network variable from the control device.
100. Lump Sum Work: is the work that is required to be done as part of this Document. This work includes the work associated with various packages as described.
101. Manual Control: A concept where the operator, from the operator workstation, takes control of an end device and forces a specific position or state. From a software perspective, the value produced by the control logic is not allowed to affect the position or state of the end device. The manual mode and the desired manual position or state are parameters that are set by the operator.

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102. Maximum Send Time Parameter: A parameter used to ensure the periodic update of network data. If a time period equal to the value of this parameter has expired without a broadcast of the variable, a broadcast of the current value shall be executed. See also send on delta (change of value) and minimum send time parameter definitions.
103. Minimum Send Time Parameter: A parameter used to control unnecessary broadcasting of data onto the network. A broadcast of an updated value shall not occur unless a time period equal to the value of this parameter has expired. The expiration of the time period does not mandate a re-broadcast. See also send on delta and maximum send time parameter definitions.
104. Modulating: Movement of a control device through an entire range of values proportional to an infinitely variable input value.
105. Multiple Controller Integrated Control (MCIC): A concept where multiple controllers with I/O are used to control a single mechanical system such as an air-handling unit. Under this concept, the mechanical system is sub-divided into a collection of processes to be controlled such as the fan start stop circuit, the fan variable speed drive, the mixed air section, the cooling coil section, etc.
106. NC: Normally Closed. Refers to the position of a switch or end device when the control signal is removed. Switch or device shall be closed.
107. Network Number: Each unique element of the system architecture is assigned a network number as part of the addressing scheme for a BACnet system. The IP layer has a network number. Each field bus has a network number.
108. NO: Normally Open. Refers to the position of a switch or end device when the control signal is removed. Switch or device shall be open.
109. Owner: Primary Care Health Services, Inc.
110. Owner's DDC System Coordinator: is the lead contact of the Owner for the DDC system for construction projects. This person will interface with the Owner and the DDC System Supplier.
111. Owner's Lead Contact: is the Owner's main contact for the DDC system project. This terminology shall be assumed to mean the same as paragraph GG (above).
112. OWS: Operator Workstation. With BACnet systems and operator workstation is also referred to as a BACnet OWS.
113. P: Proportional only control
114. Package: a portion of the project with specific starting and ending periods. Generally, a package will begin with a letter to the contractor (DDC System Supplier) signed by the Owner. The package will end with the Owner's beneficial occupancy of the space. Once the Owner has taken beneficial occupancy of the space, the warranty period for the work provided under that package will begin.
115. PICS: Protocol Implementation Conformance Statements.
116. PID: Proportional plus integral plus derivative control.

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117. Point: defined as a hardware I/O to the DDC system. Each hardware point shall occupy a maximum of one wiring termination in a DCP, DTC, or UCP. Each UCP connection to a DCP shall be considered one hardware point.
118. Process Control: Process Control consists of a control loop such as PID that requires a process variable (measured by a sensor), the logic of control (PID) and an end device to be commanded. The logic of control may require numerous application parameters that may be fixed, adjustable from the OWS, or the output of secondary control logic.
119. Process Control Sample Rate: The time between updates of a newly calculated command to an end device.
120. Process Variable Sample Rate: The time between updates of measured values as measured by physical sensors.
121. Project: the scope of the total project includes all DDC work, which will be required for a specified period from the execution of the contract. Extensions or reductions in the project scope must be mutually agreed upon by the Owner and the appropriate contractors.
122. Project Engineer-Future Projects: is to mean the engineers working on future projects not included in this document.
123. Project Site: is the space available to the Contractor for performance of construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.
124. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."
125. Pulsed Input (PI): A binary input with increased cycle rate capabilities, capable of directly counting and buffering pulses that may emanate from a metering device.
126. Pulse-Width-Modulated Output (PWM): A time-based algorithm converts a standard BO into a modulating signal. Based on the duration of the pulse, the recipient of the signal positions the device proportional to the duration of the pulse.
127. Real Time Trend Data: Trend data is a collection of values from a specific variable in a field bus level device such as the mixed air temperature on an air-handling unit. An operator workstation may poll for the value from the field device and immediately present the data in a graphical format for system troubleshooting. This type of trend data collection and presentation is called Real Time Trend Data. It is a temporary form of data collection used for periodic troubleshooting of a system problem. It is not used on a continuous basis, as excessive polling from a workstation is a poor steward of network bandwidth.
128. Regulation: The term "Regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
129. Repeater: A physical device used to connect two segments. A repeater does not filter any message traffic. A repeater does isolate physical problems such as short circuits to a single

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segment and is typically required to allow the use of additional devices or additional cable length.

130. Rolling Average: An algorithm that eliminates spikes in a variable. Parameters required for a rolling average are the specified time period and the sample rate of the algorithm. When the rolling average variable is updated, the previously calculated rolling average value is multiplied by the time period less the sample rate and then added to the current value of the process variable times the sample rate. This sum is then divided by the time period. The result is the new rolling average value.
131. (rpt): An acronym indicating data to be reported for viewing at the OWS.
132. Sample Rate Support: The term, sample rate, refers to how often an algorithm is executed. An engineer may wish that a PID algorithm controlling the mixed air damper calculate a new command to the damper once every 25 seconds. The 25 seconds is the sample rate. Sample Rate Support refers to the ability to control the sample rate for any given algorithm.
133. Send on Delta Parameter (Change of Value): A parameter used to control unnecessary broadcasting of data onto the network. A broadcast of an output variable shall not occur unless the output variable has changed by an amount equal to or greater than the value of this parameter and the minimum send time has expired since the last broadcast. See also minimum send time and maximum send time parameter definitions. For binary data, the send on delta parameter is assumed to be a change of state. Logic to support the send on delta concept may be imbedded in the configurable structure of an output point or programmed as part of the logic.
134. SI Units: A system of units based on the metric system. See the ASHRAE Handbook of Fundamentals for a complete list of engineering units in this system.
135. Software Point: defined as any hardware point or point created within the system using a calculation or data manipulation.
136. SQL: Structured Query Language. A standard interactive and programming language for getting information from and updating a database via queries.
137. Stand-Alone Controller: A stand-alone controller has provisions for all of the physical inputs and physical outputs associated with a single mechanical component such as a terminal unit, air handling unit, chiller or boiler. The controller shall also have embedded in it all of the control logic that associated the physical inputs to the physical outputs. A stand-alone controller will also have data management features such as time schedules, trend data storage and alarm message generation capabilities.
138. State Descriptors: DDC devices work in the world of binary numbers. When a binary value is displayed at the OWS, state descriptors can be appended to the data such that the operator shall see the English words rather than the binary values. Example: 0= OFF, 1= ON or 0= STOP, 1= START.
139. Sub-LAN: the network wiring for connecting UCPs. There could be several sub-LANs under a DCP.

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140. Supervision: the DDC System Supplier shall work with the DDC System Installer to obtain the final product, an operating DDC system. The DDC System Supplier shall provide sufficient supervision of these installers to ensure the work is installed without delay.
141. Supervisory Logic: Control logic that does not directly rely on physical inputs or physical outputs as does process control. Supervisory Logic uses data from multiple process control loops, applies defined logic to the collection of data and generates instructions to process control loops. Example: Collect the damper positions from 25 VAV controllers. Determine the highest value. When the highest value is at 50%, send a static pressure set point of 1.0 inches of water (adj) to the air handling unit controller. When the highest damper position is at 90%, send a static pressure set point of 1.5 inches of water (adj) to the air handling unit controller. Supervisory Logic may be executed in Building Controllers or Advance Application Controllers.
142. System Messages: A message in the event log or alarm viewer that is generated within the OWS and not from a binary indicator broadcast from a controller.
143. TCP/IP: Transmission Control Protocol/Internet Protocol. A basic communications protocol in a private network, either an intranet or an extranet.
144. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report and interpret the results of those inspections or tests.
145. Terminator: An electronic component that consists of a resistive and capacitive circuit specifically designed to enhance the quality of communications on a segment.
146. Test Instrument Certification Data: Test instruments are used to measure analog variables in order to affect the calibration of the analog sensor. Test instruments must be periodically re-calibrated by an instrument calibration laboratory to ensure accurate measurements. Re-certification shall be every 12 months unless otherwise specified by the manufacturer of the instrument.
147. Test Mode: A concept where the operator from the OWS can interrupt the flow of data from a sensor to the control logic and insert a mandatory test value or test state to be used by the control logic. The test mode and the desired test value or state are parameters that are set by the operator.
148. Throttling Range (TR): A term used with proportional control. It is the amount of change in the process variable that will cause the proportional loop output to change by 100%.
149. Transmitter: A transmitter is a device that measures a process variable such as temperature, pressure or relative humidity and generates a corresponding electrical signal such as 0 to 10 VDC or 4 to 20 milliamps for input to a controller.
150. Trend Chart: A trend chart is the graphical presentation of trend data. A trend chart can be associated with real time trend data or historical trend data.
151. Trend Logs: A trend log is a collection of samples from a specified variable that are stored within a device on the field bus. This data will be periodically sent to the data server for long term storage and reports.

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- 152. Trend Logging: The process of sampling and storing periodic values from the same variable at specific time intervals. The samples are stored at the device level and periodically uploaded to the data server where they become historical trend data.
- 153. Tuning Parameters, Floating Control: For floating control, the tuning parameters shall consist of the set point, neutral zone, sample rate, bump rate, shut down value, start up time and start up value. The action of the floating control loop, direct or reverse shall be hard coded to meet the needs of the application.
- 154. Tuning Parameters, PID Control: For PID control, the tuning parameters shall consist of the set point, loop throttling range, sample rate, integral time constant or integral gain, and derivative time constant or derivative gain, dead zone and shut down value. The action of the PID control loop, direct or reverse shall be hard coded to meet the needs of the application.
- 155. UL: Underwriters Laboratory
- 156. Unitary Control Panel" (UCP or UC): means the application specific controllers. These panels can provide stand-alone operation. Some of these panels may be configured for use with specific equipment while others will be programmable for custom applications. Units may have universal inputs/outputs.
- 157. University Points or I/O: means that all of the points that connect to the DCP, UCP/UC, or DTC are user definable; there are no fixed inputs or outputs (digital or analog).
- 158. UPS: Uninterruptible Power Supply. A device that allows your computer to keep running for at least a short time when the primary power source is lost. A UPS contains a battery that provides power when the primary power source is lost.
- 159. Validate: A term used in concert with calibration and sequence of control performance verification. To validate is to verify that processes have been executed and the results are within defined standards.
- 160. VAV: Variable Air Volume
- 161. VFD: Variable Frequency Drive
- 162. Web Server: A software package installed on a desk top computer that provides for operation access to the Enterprise Level EMCS system from a computer on the TCP/IP network, using only a browser.
- 163. Work: all labor and equipment provided under a specific contract.

1.9 SPECIFICATION FORMAT AND CONTENT

- A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 33-Division format and MASTERFORMAT numbering system. This format does not intend any organization for trade union or subcontract purposes.

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B. Specification Content: This Specification uses certain conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

1. Abbreviated Language: Language used in the Contract Documents is the abbreviated type. Implied words and meanings shall be appropriately interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and/or where the context of the Contract Documents so indicates.
2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe responsibilities that must be fulfilled indirectly by the Contractor.

1.10 DRAWING GRAPHICS AND CONTENT

- A. Graphics employed on the drawings are those recognized in the construction industry. Those used in mechanical and electrical contexts are generally those recommended by ASHRAE, ASME, ASPE, ISA and IEEE. Refer any uncertainty to the Engineer for clarification before proceeding.
- B. The manner in which the drawings are organized or titled does not intend any group for trade union or subcontract purposes.

1.11 INDUSTRY STANDARDS

- A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with the standard as stated. If not referenced by date, comply with that in effect as of the date of the Agreement.
- C. Conflicting Requirements: Where compliance with two or more standards is required and they establish different or conflicting requirements for minimum quantities or quality levels, the most stringent will be enforced. Refer requirements that are different, but apparently equal, and any other uncertainties to the Engineer for a decision before proceeding.
 1. Minimum Quantity or Quality Levels: The quantity or quality level indicated shall be the minimum provided. The actual installation may comply exactly with the minimum specified, or it may exceed the minimum within reasonable limits. In complying with these requirements, indicated numeric values are either minimum or maximum, as appropriate for the context. Refer uncertainties to the Engineer for a decision before proceeding.

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D. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Copies of standards for the performance of a required construction activity shall be obtained directly from the publication source. These standards, along with any referenced code, are to be available at the Project Site for reference.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

1.12 GOVERNING REGULATIONS/AUTHORITIES

A. The Contractor should contact those authorities having jurisdiction for data and clarification regarding the Contractor's responsibilities to the Work.

B. Trade Union Jurisdictions: As related to the construction activities, maintain complete current information on jurisdictional matters, regulations, and pending issues. Assign activities in a manner that will not unduly risk disputes, delays, claims and/or losses. Discuss new developments at the Project Meetings at the earliest date.

1.13 SUBMITTALS

A. Permits, Licenses, and Certificates: Submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

B. Schedule of Standards and Codes: Submit a listing of the standards and codes that will be maintained at the Project Site. Once accepted, provide a copy of this listing to each subcontractor and supplier.

C. See also Part 2, Paragraph 2.5 for additional Submittal requirements.

1.14 GENERAL DESCRIPTION OF PROJECT WORK

A. This division of the specification covers execution of the direct digital control (DDC) system work.

B. This division of the specification is divided into eight (8) parts to facilitate indexing and referencing.

C. The DDC system shall be furnished and installed by the DDC System Supplier.

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- D. In all cases where a device or equipment item is referred to in the singular, such reference shall apply to as many such items as are required to complete the installation.
- E. The following paragraphs outline the work which will generally be performed by the DDC contractors under most circumstances.
- F. The work covered by this specification consists of furnishing all engineering, coordination, supervision, start-up and testing services, training, necessary coordination with the owner, the contractor, equipment, accessories, and materials, and complete the installation of the DDC system in strict accordance with this specification and applicable drawings. Where the sequence of control for an equipment item or system has not been specifically addressed, the industry standard operation sequence shall be provided. If this is the case, the DDC System Supplier shall amplify or explain in detail what is being provided. The work by the DDC System Supplier generally includes the following:
1. Provide a complete DDC system as described herein. The system shall be an integrated, easy-to-operate, flexible, microprocessor-based or desktop microcomputer-based direct digital control system for control of heating, ventilating, and air conditioning, as well as space pressurization. The DDC system shall be completely factory programmed, including all color graphics and report tables, and ready for operation.
 2. The proposed system shall include any software required to program the proposed controllers. This software shall reside on the PC's. connected to the network and be configured such that any remote operators console can be used to program any of this DDC systems controllers connected to the network anywhere in the system. All scheduling, alarming, trending, and graphical user interfaces shall be accomplished through the system.
 3. Provide the automatic temperature control system including all sensors, actuators, end devices, display devices, stand-alone local control panels, network subsystems, all communication and application software, all power and control wiring and all computer equipment consoles required by the drawings and the specifications, and to provide a complete operating system.
 4. Provide hardware and software complete with all engineering, documentation, start-up/commissioning, calibration, testing, trouble shooting, field service, training, and warranty as described herein.
 5. Provide electronic sensors for all major HVAC equipment and for other equipment as herein described.
 6. Provide a complete set of submittals as described herein.
 7. Provide complete start-up and testing services as herein described.
 8. Provide training to the Owner as herein described.
 9. Provide Owner's Manual, complete operating instructions and spare parts lists as herein described.
 10. Provide a minimum one-year full service parts and labor warranty on the entire control system.
 11. Provide five-year operating system upgrades.

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12. Provide and closely supervise the DDC system installation to ensure that the installation is completed in a workmanlike manner and to satisfy himself that all work has been installed correctly so that he can provide a complete warranty for the system.
13. Provide automatic air dampers, complete with electronic actuators as specified. Provide automatic valves with valve actuators as specified.
14. Provide all unitary application-specific control panels and actuators. Coordinate with the Owner.
15. Coordinate work with the work of each and every party involved in the project.
16. Provide other work that is required for a complete and operating DDC system, which is not specifically called out.

G. Qualifications of DDC System Supplier

1. The DDC System Supplier shall have been involved with the development and the supply of similar equipment for at least five (5) years.
2. The DDC System Supplier or his representative shall have played a major role in the operation and testing of the proposed equipment type at the factory or a test facility.
3. The DDC System Supplier and his representatives shall each have a successful track record of installations using the type of equipment described herein. The proposer shall be able to submit a minimum of 10 completed projects of similar size, design, and complexity. These systems shall serve as references regarding the system and the performance of the DDC System Supplier's capability and performance.
4. The DDC System Supplier and his representative shall have in-house engineering and service personnel experienced in implementing this type of project. The engineering and service technicians assigned to the project shall have a minimum of five years of experience in systems of this type. The DDC System Supplier shall submit for approval, the resume of all personnel to be used on the project.

1.15 IMPERATIVE LANGUAGE USED GENERALLY IN THE SPECIFICATION

- A. Except as otherwise indicated, the requirements expressed imperatively are to be performed by the contractor. For clarity of reading at certain locations, contracting subjective language is used to describe responsibilities, which must be fulfilled indirectly by the contractor, or when so noted, by others.

1.16 BIDDER'S INITIATIVES

- A. The DDC System Suppliers must provide a bid for the system as specified. Deviations from the specification in quoting the bid prices may render the bid invalid.
- B. If the DDC System Suppliers have suggestions or value engineering alternatives, the same should be listed along with the price, in the Bidder's Initiatives Supplement to the Bid Form.

1.17 DDC SYSTEM SUPPLIER'S LEAD PERSON

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- A. The lead person is the main Project Engineer who will be the DDC System Supplier's main contact with respect to the project. It is intended that he will not have to confer with the DDC System Supplier's branch manager on most details.
- B. The lead person is expected to have several years' experience with the DDC System Supplier whom he represents.
- C. The Owner will have the option to approve the lead person, whose resume shall be submitted with the proposal, or to reject him. Should the Owner reject the proposed lead person, the DDC System Supplier shall offer another lead person who meets the Owner's approval at no additional cost to the Owner.
- D. During the course of the project, the Owner will have the right to request that the lead person be replaced because of failure to perform. This person will then be replaced with another lead person who meets the Owner's approval at no additional cost to the Owner.
- E. "Failure to perform" would include, but not be limited to, the following:
 - 1. Not fulfilling his lead person functions.
 - 2. Failing to be able to act independently of the branch office on most matters.
 - 3. Failing to respond to any and all matters on a timely basis.
 - 4. Failing to get the DDC system operating properly.
- F. Lead person primary functions shall include the following:
 - 1. Act as primary contact person for all matters relating to project, schedule, technical matters, billing and administrative problems.
 - 2. Attend construction meetings for the various work packages for which the DDC system supplier has a contract with the Owner.
 - 3. Provide lead engineering for and review all technical submittals for the initial project and future work packages.
 - 4. Prepare testing plans and procedures.
 - 5. Prepare training agenda.
 - 6. Attend kick-off meeting for new projects involving the DDC system.
 - 7. Coordinate, review and approve all DDC system engineering work for conformance to specification, conformance to material standard requirements and conformance to budget requirements.
 - 8. Prepare updated unit pricing annually and review the updated pricing with appropriate Architect/Engineer and Owner representatives, as required.
 - 9. Coordinate work with the Architect/Engineer and Owner.
 - 10. Review and approve all project billings.
 - 11. Coordinate all work being performed by all Engineers and installation supervisors provided by the DDC System Supplier under this contract.
 - 12. Coordinate new DDC system works with the existing DDC system work by coordinating with the Owner's maintenance personnel.
 - 13. Work with the Engineer on the design of control systems for scope changes.

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14. Be responsible for accurate installation of all equipment.

- G. The lead person will be responsible for supervising all installation work and as such may be supported by the DDC System Supplier with additional personnel to fulfill those duties at no additional cost to the Owner.

END OF PART 1

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PART 2 – GENERAL COORDINATION AND ADMINISTRATION

2.1 SCOPE OF THIS SECTION

- A. This specification covers the general requirements for project coordination and administration of the DDC System project for the work related to the entire project, as well as individual packages. This part also describes the general requirements for system installation, start-up, testing, submittals, etc.
- B. For various packages described in this document and all future DDC System packages, requirements for that building package shall apply. In case of two conflicting directions, the most stringent requirement shall apply.

2.2 ABBREVIATIONS AND DEFINITIONS

- A. Refer to Paragraphs 1.7 and 1.8 for Abbreviations and Definitions respectively.

2.3 APPLICABLE STANDARDS AND PUBLICATIONS

- A. The standards and publications listed hereafter form a part of this specification to the extent referenced. The publications are referred to in the text by their abbreviated designation only. Other publications, codes, and standards may also be applicable.

1. Federal Communications Commission (FCC) Rules and Regulations:

- Part 15 Radio Frequency Devices (Vol. II, July 1981)
- Part 68 Connection of Terminal Equipment to the Telephone Network (Vol. X, July 1977)

2. American National Standards Institute (ANSI) Publications:

- C2-1987 National Electrical Safety Code
- C62.41-1980 Guide to Surge Voltages in Low Voltage AC Power Circuits
- C12.1-1982 Code for Electricity Metering and Correction Sheet
- C57.13-1978 Instrument Transformers
- ANSI/IEEE Guide on Surge Testing for Equipment Connected to Low Voltage AC Power Circuits
- C62.45-1987
- ANSI/IEEE Recommended Practices for Establishing Transformer Capability when Supplying Non-sinusoidal Load Currents
- C57.110-1986
- ANSI/ASHRAE Standard 135-1995

3. American Society of Mechanical Engineers (ASME) Publications:

- Fluid Meters, Their Theory and Application (6th Ed., 1971; Errata 1974)

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4. Electronic Industries Association (EIA) Publications:
 - RS-232-C Interface Between Data Terminal Equipment and Data\Communication Equipment Employing Serial Binary Data Interchange (Oct. 1969)
5. The Institute of Electrical and Electronics Engineers, Inc. (IEEE) Publications:
 - No. 142-1991 Recommended Practice for Grounding of Industrial and Commercial Power Systems
 - No. 1100-1992 Powering and Grounding Sensitive Electronic Equipment
 - No. 587-80 Guide for Surge Voltage in Low Voltage AC Power Circuits
6. National Electrical Manufacturers Association (NEMA) Publications:
 - 250-1979 Enclosures for Electrical Equipment Incl. Rev. 1 (1000 Volts Maximum)
7. Underwriters Laboratories (UL):
 - UL 1449-1987 Transient Voltage Surge Suppressors
 - UL 268A Smoke Detectors for Duct Applications
8. National Fire Protection Association (NFPA)
 - NFPA 70 National Electric Code
 - NFPA 101 Life Safety Code
 - NFPA 92A Recommended Practice for Smoke Control System
9. International Building Codes
10. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)
 - a. ASHRAE Guideline 13-2000, Specifying Direct Digital Control Systems.
 - b. ANSI/ASHRAE 62.1-2004, Ventilation for Acceptable Indoor Air Quality.
 - c. ANSI/ASHRAE Standard 135-2004, BACNET - A Data Communication Protocol for Building Automation and Control Networks.
 - d. ASHRAE Handbook, 2003 HVAC Applications.
 - e. ASHRAE Handbook, 2004 HVAC Systems and Equipment.

2.4 SUBSTITUTIONS

- A. It is the Owner's intent to get all common types of equipment on this project.
- B. The DDC System Supplier shall furnish the sensors which he submits in his technical proposal only.

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- C. "Approved equal", as listed behind each supplier, means as approved by the Architect and Owner. When "approved equal" is listed, the DDC System Supplier shall provide the particular product specified or a comparable item with all the specified characteristics and accessories which is manufactured by a reputable manufacturer. No device, sensor, or equipment shall be substituted without the Owner's approval. Where the particular device does not meet the required specification, the DDC System Supplier will be required to provide an "approved" device at the same cost as listed on the bid form for all lump sum work.
- D. Should a sensor or equipment device become technically obsolete or unavailable or should a sensor or equipment device provide unsatisfactory service as judged by the Owner and/or the DDC System Supplier, a substitution may be made. Once the substitution is made, all of the devices installed thereafter shall be the "substitute" device.

2.5 SUBMITTALS - GENERAL

- A. The DDC System Supplier shall be prepared to submit requested data or samples on all material and equipment items to be installed on the project.
- B. General
 - 1. After award of contract, submittals for all items of system hardware and software (including technical data which relates to computer software), which are specifically identified in the specification, shall be delivered strictly in accordance with the requirements of the specification to the Architect/Engineer. The Engineer and/or Architect will review all submittals and samples of conformance with design concept of the project and the information contained in the contract documents. The Engineer's and/or Architect's review is for the convenience of the Owner in following the work and does not relieve the vendor/supplier/manufacturer of the responsibility of deviations from the requirements stated in the specification and contract documents. The Engineer's and/or Architect's review shall not be construed as a complete or detailed check of the work submitted nor shall it relieve the vendor/supplier/manufacturer of responsibility for errors of any sort in the submittals and samples or from the necessity of furnishing any work required by the contract documents which may have been omitted from the submittals. The review of a separate item shall not indicate review of the complete assembly in which it functions. Nothing in the Engineer's and/or Architect's review of submittals and samples shall be considered as authorizing (1) a departure from contract documents or the specification, or (2) additional cost to the Owner, or (3) increased time for completion of the work.
 - 2. The Engineer and/or Architect will review submittals with reasonable promptness and will return them to the DDC System Suppliers. The proposals will be stamped as follows to indicate the appropriate action taken:
 - a. Reviewed.
 - b. Revise and resubmit.
 - c. Rejected.

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3. Manufacturer's data sheets for material and equipment shall include model numbers, dimension drawings, operating weights, material specifications, operation and controls, wiring diagrams, performance characteristics, and service procedures, including clearance requirements for maintenance work and conformation to specified codes.
4. No part of the work shall be started in the shop or in the field until the Engineer and/or Architect has reviewed the shop drawings and samples for that respective portion of the work. Shop drawings and samples shall be submitted for review sufficiently in advance of the scheduled start of the work in the shop or in the field to allow ample time in consideration of the number and complexity of the drawings in the submittal, for the Engineer and/or Architect to make an orderly review. No extension of time will be granted to the DDC System Supplier by reason of failure to perform in this respect.
5. Each shop drawing and sample submitted for review shall be accompanied by a letter of transmittal and shall be identified by the project title, DDC System Supplier's name, and a reference to the related point of the contract documents.
6. Shop drawings shall be 11 inch by 17 inch, landscape, bound on the left edge. Organize the packages by building if applicable.
7. All text based documents and product data sheets shall be 8 ½ inch by 11 inch format bound on the left edge.
8. All shop drawings in AutoCAD and PDF format shall be included on fully labeled CDs that includes a table of contents file in PDF format that provides a description of all of the files on the CD.

C. BACS Configuration Management

1. DDC System Supplier shall maintain site-wide configuration documentation. Whenever the BACS is extended, the documentation required in this section shall be provided/updated per configuration management requirements to reflect the entire installation on the campus. Device naming and addressing must conform to the Owner's specific conventions. No device will be connected to the Owner's network until these conventions have been understood and met.

D. Documentation Format

1. Hard Copy (General): Five paper copies of the indicated deliverables shall be provided. At a minimum, three sets of hard copies shall be maintained; one at the facility, one in the HVACR shop, and one in the project maintenance manual. The architect/engineer will retain two copies. If the DDC contractor requires additional copies, that number shall be added to the preceding list.
2. Hard Copy (Control Panels): Each control panel on the project shall include an as-built hard copy of all drawings and documentation associated with that panel and its field devices. This documentation shall be provided in a plastic protective pocket mounted inside the panel door. In addition, see Operation and Maintenance Materials.

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3. Electronic Copy: All submittal and as-built documents shall be provided electronically, to the HVACR shop. Different documents may be in different formats, however each shall be provided in one of the first two formats as well as in the format in which the document was originally created, if it is different.
 - a. Microsoft Office format (Word, Excel, etc.)
 - b. Adobe Portable Document Format (PDF).

E. As-Built Drawings

1. As-Built Drawings: As-built documentation as indicated herein shall be maintained and submitted to reflect the final installed condition of the BACS. The as-built documents shall be kept up to date throughout the warranty period and submitted as final at the end of the warranty period. One set of documents and files shall be provided to be stored locally at the new facility and two sets shall be provided to be stored centrally.

F. Documentation Required

1. Control Schematics: Control schematics shall be utilized to graphically indicate the systems, show the schematic configuration of the systems and location of control devices, define the point names and addresses (as applicable), and define the setpoints for control elements. Control schematics are required both as part of the contract documents (generated by the design professional), shop drawing submittals, and as-built document submittals. The following shall be included in the controls schematics at a minimum:
 - a. Point names.
 - b. Point addresses (not applicable to the contract documents).
 - c. Point type.
 - d. Normal position of output devices.
 - e. Device ranges.
 - f. Initial design intent setpoints modified as refined during construction/ commissioning for as-built submittals.
 - g. Bill of materials listing all devices and manufacturer numbers (not applicable to the contract documents).
 - h. Legend of device symbols.
2. Product Data: Submit manufacturer's technical product data for each control device, panel, controller, and accessory furnished indicating dimensions, capacities, performance and electrical characteristics, and material finishes. Also include installation, start-up, calibration, and maintenance instructions as well as all cable and tubing requirements. Provide these as a part of the shop drawings and as-built submittal.
3. Valve Schedules: Either with the control schematic or separately in shop drawing submittal and as-built submittal provide a valve schedule listing the following:
 - a. Size.
 - b. CV.

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- c. Design maximum flow.
- d. Pressure drop at design maximum flow.
- e. Position of valve at design condition.
- f. Manufacturer.
- g. Model/product number.
- h. Close off rating.
- i. Normal positions.
- j. Valve characteristic.
- k. Valve turndown.
- l. Actuator information.
- m. Design controlled circuit pressure differential range (coordinated with the submittals).

Valves shall be selected such that they are not, as a practice, “oversized.” Valve sizes shall be picked as close as possible to meet the design pressure drop. The minimum CV shall be no less than 1.9 on all valves (See Section III, 3.04 “Control Valves” for additional information).

- 4. Control System Architecture Diagram: Provide a system architecture one-line diagram indicating schematic location of all controllers, workstations, LAN interface devices, gateways, etc. Indicate address and type for each control unit. Indicate physical media, protocol, communication speed, and type of each LAN.
- 5. Control Sequence of Operations (See also Section II, 2.06 “Detailed Written Sequences of Operation”)
 - a. All projects shall include detailed sequence of operations. Sequences may be on the control schematics or in the specifications in the contract documents, but shall be included with the control schematics for the shop drawing and as-built submittal. Control sequences shall be highly detailed in the design phase and shall maintain this detail throughout the as-built submittal phase. The following shall be included as a minimum:
 - 1) Sequences in all modes of operation (i.e., on, off, occupied, unoccupied, warm-up, cool-down, summer, winter, economizer, etc.);
 - 2) Detailed steps during mode switches;
 - 3) Details of operation during and after a power outage. Loss of status associated with power outages must not be indicated as failures with a subsequent alarm or lock out;
 - 4) Specific direction on failure scenarios for loss of proof and all safety device trips;
 - 5) Setpoints, trip points, and ranges. Initially these shall be the designer’s intent, and eventually be the actual setting at time of as-built submittal;
 - 6) Smoke control systems;
 - 7) Fire alarm panel interlocks and special operating modes.

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- b. All related equipment should be grouped together by areas served. Also, group all sequences into functional sections (i.e., start/stop, static pressure control, economizer, etc.).

6. Points List (See also Section II, 2.05 “Design Points List”): A detailed point list shall be provided in tabular form either with the control schematics or separately. Indicate all physical and virtual points and organize by system/sub-system. Include names, descriptors, addresses (when known) and point types with applicable range as a minimum. These shall be provided electronically in either a database format or in a spreadsheet format.
7. Alarms and Alarms List: Either as part of the points list or as a separate list, an alarms list shall be provided. The list shall include the alarm point name, point type, and alarm parameters. All analog control loops shall include an adjustable setpoint deviation alarm based upon error and time. The alarm parameters shall be the state the point is in to cause a particular alarm. An example of a point in this list is as follows:
 - a. Supply air temp (AI) +/-5°F from setpoint.
8. Floor Plans: Provide a set of floor plans with all controllers/control panels, sensors, operator workstations, interface devices, UPS’s, etc., located and identified. All network components (repeaters, routers, etc.) shall also be identified on the floor plan drawings. All BACS network wiring shall be shown and identified on the floor plan drawings.
9. Detailed Wiring Diagrams: Shop drawings and as-built submittals shall include detailed wiring diagrams. Indicate all required electrical wiring. Wiring diagrams shall include both ladder logic type diagrams for motor starter, control, and safety circuits and detailed digital interface panel point termination diagrams with all wire numbers and terminal block numbers identified. Provide panel termination drawings on separate drawings. Ladder diagrams shall appear on the system schematic. Clearly differentiate between portions of wiring that are factory-installed and portions to be field-installed. These shall be submitted with shop drawing and as-built submittals. All wiring of related components that make up a system shall be grouped together in one diagram (e.g., all wiring diagrams for the components and devices on a particular DOAS shall be shown on one drawing. The supply fan components and devices should not be shown separate from return fan components and devices, etc.).
10. Sample Graphics and Trends: If the project includes web-based graphics and trends for the use of interfacing to the BACS, the vendor shall submit for approval draft samples of the actual graphics to be used for the project. Design professional and project manager, after consultation with the HVACR Shop, shall approve the graphics.
11. Operation and Maintenance Materials: Provide Operation and Maintenance (O&M) materials generally in concert with training. O&M materials shall include the following:
 - a. Maintenance instructions and spare parts list for each type of control device, control unit, and accessory.
 - b. BACS User’s Guides (Operating Manuals) for each controller type and for all workstation hardware and software and workstation peripheral.

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- c. BACS Programming Manuals for each controller type and for all workstation software.
- d. All submittals with as-built information (product data, shop drawings, control logic documentation, hardware manuals, software manuals, installation guides or manuals, maintenance instructions, and spare parts lists). As-built panel drawings shall also be included as part of the O&M manual process. The drawings that are located in each panel shall incorporate all the systems controlled from that particular panel. The drawings shall include the system schematic and detailed panel wiring diagram (as detailed above). Also included (typically noted on the system schematic diagrams) should be the specific locations of any remote devices such as remote static pressure sensors, etc.).

2.6 OWNERSHIP OF PROPRIETARY MATERIAL

- A. The Owner shall retain all rights to software for this project.
- B. The Owner shall sign a copy of the manufacturer’s standard software and firmware licensing agreement as a condition off this contractor. Such license shall grant use of all programs and application software to the Owner as defined by the manufacturer’s license agreement, but shall protect the manufacturer’s rights to disclosure of Trade Secrets contained within such software.
- C. The licensing agreement shall not preclude the use of the software by individuals under contract to the owner for commissioning, servicing, or altering the system in the future. Use of the software by individuals under contract to the owner shall be restricted to use on the owner’s computers and only for the purpose of commissioning, servicing, or altering the installed system.
- D. All project developed software, files and documentation shall become the property of the Owner. These include but are not limited to:
 - 1. Server and Workstation software
 - 2. Application Programming Tools
 - 1. Configuration Tools
 - 2. Addressing Tools
 - 3. Application Files
 - 4. Configuration Files
 - 5. Graphic Files
 - 6. Report Files
 - 7. Graphic Symbol Libraries
 - 8. All Documentation.

END OF PART 2

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PART 3 – SYSTEM HARDWARE REQUIREMENTS

3.1 GENERAL

- A. This document defines the minimum hardware and performance requirements for a computer-based DDC system.
- B. System Requirements
 - 1. Provide all equipment, accessories, wiring (power and control) and instrument piping required for a complete and functioning DDC system.
 - a. All materials and equipment used shall be standard components, regularly manufactured for this system and not custom designed especially for this project. All systems and components shall have been thoroughly tested and proven in actual use.
 - b. All embedded conduit shall be rigid conduit.
 - c. The DDC system shall be of a fully modular architecture permitting expansion by adding computer memory, application software, operator peripherals and field hardware.
 - 2. Application Requirements
 - a. The DDC system shall meet the performance requirements of the following applications:
 - 1) Heating, Ventilating and Air Conditioning Control
 - 2) Dedicated Outdoor Air Systems
 - 3) Variable-Refrigerant-Flow Systems
 - 4) Exhaust Fans
 - 5) Historical Data Collection
 - 6) Monitoring of critical events
 - 7) Mass Flow Totalization
 - 8) Scheduling and integration with the lighting control system
- C. Software and Hardware Updates - At the end of the first six months, and during the second six months, the Controls Contractor shall update the equipment and any controllers, servers, workstations and HMI Web servers with the latest modifications and improvements in software, firmware, and hardware that the manufacturer may have incorporated in the furnished equipment.
- D. Devices (i.e., sensors, meters, instruments, etc.) that are resettable must be installed in a readily accessible location (e.g., the device must be accessible at floor level without the use of a ladder). No device shall require shutting down a building system for calibration.

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- E. Devices that are installed in an exposed location (i.e., not mounted within a cabinet) must be suitable for such installations (e.g., do not install a device that is intended to be installed in a cabinet in an exposed location)
- F. Environmental Conditions:
1. The DCP, Data Terminal Cabinets (DTC) and all other field equipment shall be rated for continuous operation under ambient environmental conditions of 35°F to 120°F dry bulb and 5 to 95 percent relative humidity, noncondensing. Equipment installed in a more severe environment shall withstand conditions as specified. If equipment is required to operate in such severe environments, appropriate environmental-type housings shall be furnished in accordance with the specification. Instrumentation and control elements shall be rated for continuous operation under the ambient environmental temperature, pressure, humidity, and vibration conditions specified or normally encountered for the installed location.
 2. Operator's console shall be designated for continuous operation under ambient environmental conditions of 60° to 85°F and a relative humidity of 20 to 80 percent, noncondensing.
- G. Power Line Surge Protection: All equipment connected to AC circuits shall be protected from power line surges. Equipment protection shall meet the requirements of ANSI/IEEE C62.45-1987 and tested to UL 1449-1987. Fuses shall not be used for surge protection. The inputs and outputs shall be tested in both normal mode and common mode using the following two waveforms.
1. Test 1, Category A: 100 kHz ringwave of 6 kV at 200 amps
 2. Test 2, Category B: 100 kHz ringwave of 6 kV at 500 amps
 3. Test 1, Category B: 1.2 x 50 at 6 kV biwave; 8 x 20 at 3,000 amps
 4. Test 2, Category C: 1.2 x 50 at 6 kV biwave; 8 x 20 at 10,000 amps
- H. Sensor and Control Wiring Surge Protection: All digital and analog inputs and outputs shall be protected against surges induced on control and sensor wiring installed outdoors. The inputs and outputs shall be tested in both normal mode and common mode using the following two waveforms.
1. A 10 microsecond by 1000 microsecond waveform with a peak voltage of 1500 volts and a peak current of 60 amperes.
 2. An 8 microsecond by 20 microsecond waveform with a peak voltage of 1000 volts and a peak current of 500 amperes.
- I. Communication Link Surge Protection: All communication equipment shall be protected against surges induced on any communications link. All cables and conductors, except fiber optics, which serve as communication links from the operator's console to field equipment and between field equipment shall have surge protection installed at each end. Protection shall be furnished at equipment and additional protectors rated for the application on each wireline circuit shall be installed within three (3) feet of the building cable entrance.

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J. Power Line Conditioners (PLC): PLCs shall be furnished for all operator's consoles equipment and each DCP. The PLCs shall provide both voltage regulation and noise rejection (both at low frequency and radio frequency). The PLCs shall be of the ferroresonant design, with no moving parts and no tap switching, while electrically isolating the secondary from the power line side. The PLCs shall be sized for 125 percent of the actual connected KVA load. Characteristics of the PLC shall be as follows:

1. At 85 percent load, the output voltage shall not deviate by more than +1 percent of nominal when the input voltage fluctuates between -25 percent to +15 percent of nominal.
2. During load changes of zero to full load, the output voltage shall not deviate by more than +3 percent of nominal. Full correction of load switching disturbances shall be accomplished within 3 Hertz, and 95 percent correction shall be accomplished within 2 Hertz of the onset of the disturbance.
3. Total harmonic distortion shall not exceed 3-1/2 percent at full load.
4. Minimum electromagnetic interference and radio frequency interference noise rejection shall be:
 - a. 20 KHz - 100 MHz - 60 dB normal mode
 - b. 20 KHz - 100 MHz - 40 dB common mode
5. All field equipment, including DCPs, DTCs, UCPs, ACPs (if applicable) shall have power line surge protection installed. As a minimum, Hubbell surge suppression receptacles shall be used.

K. The DDC system shall be capable of automatically calling a minimum of nine (9) telephone numbers or alphanumeric pagers. If a called number is busy, repeated attempts shall be made after a user-defined interval until one of the following occurs:

1. The call is answered.
2. The calling process is terminated by the system operator.
3. The alarm condition ceases to exist.
4. The proposers are encouraged to provide various arrangements for achieving this function. It is also a requirement that the system report troubles by calling various alphanumeric pagers. The Owner will supply the details of these pagers.

3.2 CONTROLLERS

A. Overview

1. The control system shall consist of an inter-network of controllers as described under BACS Infrastructure (See Part 4 of this section). The functional intent of the guideline is to allow cost-effective application of manufacturers' standard products while maintaining the integrity and reliability of the control functions commensurate with their application.

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B. Controller Installation Requirements

1. Building- and system-level controllers shall be capable of operating independently, in stand-alone fashion, with no communication to other devices on the network while performing their monitoring and control routines using programs and operating parameters stored in the controllers' memory.
2. All points and functions that make up a functional system (typically that shown on one control schematic) shall be included in one controller to qualify for this stand-alone functionality. Where control sequences depend on global variables such as OAT, the controller shall have the capability of either using the last value or a default value. Design professional shall specifically indicate point groupings for stand-alone capability. Examples of required functional point groupings are:
 - a. All points and functions required to control an outdoor air unit with all directly associated supply and exhaust fans. This excludes the terminals that may be associated with that outdoor air unit. Values that may be received across the network include:
 - 1) Humidity;
 - 2) Emergency power source indication;
 - 3) Terminal based reset parameters;
 - 4) Smoke modes.
 - b. All points associated with the supply side of a direct expansion system: condenser, flow meters, temperature and pressure sensors, proof indications, valves etc. Values that may be received across the network include:
 - 1) OAT and humidity;
 - 2) Emergency power source indication;
 - 3) Terminal based reset parameters.
 - c. All points and functions required to control one terminal system including dampers, valves, flow meters, temperature and humidity sensors, etc. This does not include the scheduling period or any OA that may be necessary for control.
3. Controller software must be capable of detecting hardware and software failures and forcing all outputs to a predetermined state, consistent with the failure mode requirements defined on the drawings. In this state it shall issue an alarm.
4. Controllers must include sufficient memory for all required operation and all required trending, when trending is buffered in the controller. Where control system operation is hindered by the shortage of memory, contractor shall, at no cost to the Owner, either upgrade the memory or provide multiple controllers. The mix of points for multiple controllers shall not violate the stand-alone requirements. Volatile memory is required to be backed up in the event of power loss. Software stored in non-volatile memory will not have to be downloaded from the central server after an interruption of power occurs.

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5. Controllers used for time-scheduled operations must be equipped with a battery backed internal real-time clock function to provide a time base for implementing time-dependent programs. Provision shall be made for the routine updating of the controllers' clocks via a time master.
6. Resumption of power after an outage shall cause the controllers to automatically restart and establish communications as needed by their applications. Controller shutdown based on a self-diagnosed failure in the power supply, hardware, or software must set each piece of controlled equipment to a predetermined failure mode.
7. Controllers shall be powered from the most reliable source that powers any of the systems it serves. In the situation where a controller will be required to continuously collect data to be transmitted to a workstation, or where it monitors critical recovery information such as the presence of emergency power, it may be necessary to provide a UPS for the controller as well as any critical sensors. Where panels are provided with a different power source as the equipment (such as when the panel is on a UPS), the panel shall be provided with a means of monitoring the power source to the controlled equipment. This can be a dedicated power monitor or a value coming from transfer switch contacts.

3.3 SENSORS

A. General

1. The following indicates basic requirements for the I/O devices.
2. All sensors and transmitters shall be located in accessible locations that do not require system shutdown for calibration. Locate all remote transmitters in control panels 5' above finished floor.

B. Temperature Sensors

1. Sensor Resolution - When matched with A/D converter of the controller, sensor range shall provide a resolution of no less than 0.4°F (unless noted otherwise).
2. Room Temperature Sensor - These shall be an element contained within a ventilated cover, suitable for wall mounting. Provide an insulated base.
 - a. Sensing element – RTD or thermistor +/- 0.8°F accuracy at calibration point;
 - b. Provide set-point adjustment and appropriate cabling where indicated for zones. Public spaces shall not have setpoint adjustment. The setpoint adjustment shall be a warmer/cooler indication that shall be scalable via the BACS system;
 - c. Provide an occupancy override button on the room sensor enclosure and appropriate cabling where indicated (this shall include all office spaces). This shall be a momentary contact closure;
 - d. Provide the sensor with an alphanumeric display;
 - e. Provide sensor with communications jack and appropriate cabling for connection to the BACS.

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3. Single Point Duct Temperature Sensor - These shall consist of a sensing element, junction box for wiring connections, and a gasket to prevent air leakage or vibration noise. The temperature range as required for resolution is indicated above. The sensor probe shall be stainless steel.
 - a. Sensing element - RTD or thermistor +/- 0.5°F accuracy at calibration point.
4. Averaging Duct Temperature Sensor - These shall consist of an averaging element, junction box for wiring connections and gasket to prevent air leakage. Provide sensor lengths and quantities to result in one foot of sensing element for each, two square feet of coil/duct face area. Temperature range shall be as required for resolution as indicated above.
 - a. Sensing element - RTD or thermistor +/- 0.5°F accuracy at calibration point.
5. Liquid Immersion Temperature Sensor
 - a. These shall include brass or stainless steel thermowell, sensor and connection head for wiring connections;
 - b. Sensing element - RTD, thermistor, or integrated circuit, +/- 0.4°F accuracy at calibration point. The temperature range shall be as required for resolution of 0.3°F;
 - c. Refer to the metering specification for temperature sensors that are used for metering.

C. Humidity Sensors

1. Units shall be suitable for duct, wall (room), or outdoor mounting. Units shall be two-wire transmitters utilizing bulk polymer resistance change or thin film capacitance change humidity sensor. Units shall produce linear continuous output of 4-20 mA for % RH. Sensors shall have the following minimum performance and application criteria:
 - a. Input Range: 0 to 100% RH;
 - b. Accuracy (% RH): +/- 2% (when used for enthalpy calculation, dewpoint calculation, or humidifier control) or +/- 3% (monitoring only) between 20-90% RH at 77°F, including hysteresis, linearity, and repeatability;
 - c. Sensor Operating Range: As required by the application;
 - d. Long Term Stability: Less than 1% drift per year.
2. Acceptable Manufacturers:
 - a. Vaisala;
 - b. Mamac.
- 3.

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4. OA Sensors

- a. These shall consist of a sensor, sun shield, utility box, and watertight gasket to prevent water seepage. The temperature range shall be as required for the resolution indicated above;
- b. Sensing element - RTD, thermistor, or integrated circuit, +/- 0.4°F accuracy at calibration point;
- c. On major/critical systems, one shall be provided for each;
- d. Sensors shall be located on a north wall of the building and installed with stand-offs. On 100% OA systems and lab buildings, locate sensor in outside air plenum.
- e. Provide one sensor per mechanical room or building-level controller.

D. Occupancy Sensors

1. Occupancy sensors used in labs, classrooms, offices, and comparable spaces shall be Watt Stopper Model # CI-24 ceiling-mounted, 24VAC, passive infrared occupancy sensors;
2. Occupancy sensors used in auditoriums and comparable spaces shall be Watt Stopper Model # DT-200 wall-mounted, 24VAC, dual technology (passive infrared and ultrasonic) occupancy sensors;
3. Install no less than two occupancy sensors per space in laboratory spaces;
4. Occupancy sensors shall be installed such that the sensor has unobstructed coverage of the entire space.

E. Dewpoint Sensors

1. Units shall be suitable for duct, wall (room) or outdoor mounting. Units shall be two-wire transmitters utilizing bulk polymer resistance change or thin film capacitance change humidity sensors. Units shall produce linear continuous output of 4-20 mA for dewpoint temperature (°F). Sensors shall have the following minimum performance and application criteria:
 - a. Accuracy: +/- 1.8°F;
 - b. Sensor Operating Range: As required by the application;
 - c. Long Term Stability: Less than 1% drift per year;
 - d. Digital display.
2. Acceptable Manufacturers:
 - a. Vaisala only.

F. Current Switches (CS)

1. For Constant Speed Motors:
 - a. CS shall be provided for status indication of constant speed motors;

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- b. Switch shall indicate loss of status when current falls below an adjustable trip point;
- c. CS shall include LED indication of status;
- d. . Acceptable Manufacturer: Veris Industries (H708/ H908 series).

2. For Variable Speed Motors:

- a. Typically, status indication that indicates VSD or bypass operation shall be derived from contacts on the VSD. The VSD must be specified to include this option;
- b. Otherwise, a current switch shall be provided for status indication. The switch shall be microprocessor based and suitable for use on a VSD;
- c. Self-adjusting trip setpoint;
- d. Factory programmed to detect belt loss undercurrent conditions;
- e. CS shall include LED indication of status;
- f. Acceptable Manufacturer: Hawkeye.

G. CO2 Sensors:

- 1. Acceptable Manufacturer: Vaisala specification as basis.

3.4 CONTROL DAMPERS

- A. Dampers shall be applicable for the rated pressure and velocity service. Damper structural rating shall exceed extreme anticipated conditions like fan deadhead.
- B. Modulating dampers shall be carefully selected to control in a smooth and stable fashion across the range of anticipated conditions. Except where size dictates a single blade, dampers shall always be opposed blade. When a large section of damper is to be connected to a single jackshaft, size limitations shall be followed. This will prevent excessive damper area or, more importantly, length from being connected to a single jackshaft. Typically, the manufacturer’s recommendation shall be sufficient for specifying a limit to the size of a damper bank that may have field fabricated jackshaft connections.
- C. Whenever possible, dampers shall have external crankshafts to allow the connection of the damper actuator outside of the air stream. This will allow for easier access to the actuators for maintenance.
- D. OA control dampers shall be low leakage dampers with damper seals.
- E. Output to modulating control dampers shall be analog.
- F. Acceptable Manufacturers: Johnson Controls, Ruskin, and Nailor.

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3.5 DAMPER ACTUATORS

- A. General: Size actuators and linkages to operate their appropriate dampers or valves with sufficient reserve torque or force to provide smooth modulating action or two-position action and adequate close off rating as required.
- B. For AHU/ duct mounted dampers:
 - 1. Actuators shall be electronic.
 - 2. Standard Electronic Actuators: Shall be designed for a minimum of 60,000 full cycles at full torque and be UL 873 listed. Provide stroke indicator. Actuators shall have a positive positioning circuit and selectable inputs. Full stroke shall be within 90 seconds. Where fail positions are required, provide spring return on the actuator with adequate close off force.
 - 3. Acceptable Manufacturers: Belimo and Johnson Controls.
- C. For terminal unit dampers:
 - 1. Standard Electronic Actuators: Shall be designed for a minimum of 60,000 full cycles at full torque. Provide stroke indicator. Output to modulating damper actuators may be analog or floating.
 - 2. Fast Acting Electronic Actuators: Provide fast acting electronic actuators for VAV terminals on fume hood and associated tracking zone dampers. These actuators shall move full stroke in less than one second. Output to modulating damper actuators shall be analog.
 - 3. Venturi Style Air Valves: Provide a factory mounted and calibrated electronic positioner and fast acting (less than one second full stroke) actuator with position feedback.

3.6 CONTROL PANELS

- A. Enclosures
 - 1. All BACS panels shall be metal enclosures containing the controller, I/O modules, power supplies, termination strips, battery (if not integral to the controller or I/O module) and a spare AC outlet.
 - 2. All penetrations of the BACS or outboard gear panels in mechanical rooms shall be from the bottom of the enclosure with wireway and conduit stubs from the wireway up to the panel.
 - 3. All transformers and power supplies shall be mounted outside of the central panel.
 - 4. Enclosures located in mechanical rooms shall be NEMA 4.
 - 5. Enclosures shall be mounted on walls or free-standing supports.
 - 6. Provide enclosures with key lockable doors.
- B. Power Supplies
 - 1. The Contractor shall provide a regulated, protected power supply as required with the ability to produce at least 33% more current than required by the transmitters and controls

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being installed. Output regulation shall be less than 0.5mV. There shall be no overshoot on turn on or off. Operating temperature shall be -20 to +70°C

2. The BACS Contractor shall certify in writing at the time of shop drawing submittal that the DDC equipment provided will not cause, as a result of its operation, either directly or indirectly, electrical interference to be induced into the building's electrical power systems.
3. Class II transformers shall be used.

C. Panel Fabrication

1. The Contractor shall size the panel such that no more than 80% of the surface of the enclosure back plate is used.
2. Plastic wire way (e.g., Panduit) shall be used to organize all wiring in the panel.
3. Sufficient wire way shall be provided in the panel such that it is filled no more than 80% capacity.
4. Panel layout and construction shall be neat and professional.
5. All controllers, wiring, and components in the panels shall be labeled. All labeling shall match the reference numbers on the cabinet drawings that shall be provided for each panel.
6. Label the power source and circuit number for each panel.

3.7 CONTROL WIRING

A. General:

1. All control wiring in mechanical equipment rooms or other spaces in which it is readily accessible shall be installed in electrical metal tubing (EMT) with compression fittings.
2. All control wiring run in interstitial spaces shall either be run in EMT or a cable tray or raceway.
3. All control wiring installed outdoors or any area subject to moisture shall be installed per code.
4. All control wiring installed in vertical chases shall be installed in EMT.
5. All control wiring above non-accessible ceilings shall be installed in EMT.
6. All control wiring installed above accessible ceiling spaces which are not laboratories or AHU's shall be plenum type, not installed in conduit, but neatly run with generous use of rings or ties.
7. Wire shall be unspliced from the controller to the sensor or device.
8. Control wiring shall not be routed in the same raceway as power wiring.
9. Unless specifically required otherwise by the BACS equipment manufacturer, all I/O wiring shall be twisted shielded pair cable. For sensors, the shield shall be grounded at the panel and taped back at the sensor. For communications, the above control wiring requirements and the BACS equipment manufacturer's installation guidelines and recommendations shall apply.
10. Control wiring shall be color coded and labeled at all points of termination.
11. Remove and properly dispose of all abandoned control wiring, conduit, tubing, boxes, enclosures, components, and other controls-related work.

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B. Responsibilities - The BACS contractor wiring responsibilities shall include the following:

1. All wiring from mechanical and electrical alarms and functions (as scheduled on the drawings) as required to report these alarms and functions to the BACS head-end.
2. All line and low voltage wiring for the control of all HVAC motors (whether individual or as part of packaged equipment), automatic control valves, and dampers, including: wiring for EPs, PEs, relays, controllers, thermostats, actuating devices, unit heater controls, and cabinet heater controls, except as noted below.
3. The electrical trade shall provide "lock-out stop" control wiring.
4. A separate system of wiring for smoke and fire control of motors which are to be automatically and/or manually controlled by the fire protective alarm system will be run to the motor starters or BACS enclosures by the electrical trade.
5. A separate system of wiring for smoke and fire control of dampers that are to be automatically and/or manually controlled directly by the fire protective alarm system (i.e., not in response to motor operation), will be run by the electrical trades except for the power supply wiring to electric damper motors that is specifically excluded from the electrical trade work.
6. ATC contractor shall provide all power supply wiring for all ATC supplied components.

3.8 OPERATOR CONSOLES - ENGINEER'S OFFICE

- A. The DDC System Supplier shall provide all computer equipment specified for this application.
- B. This section lists the minimum requirements generally appropriate for an operator console located in the building engineer's office.
- C. For estimation of installation, the DDC System Supplier shall assume that the location of his equipment is within 300 feet of an area where access to the LAN is available.
 1. The engineer's office operator console shall be a web based interface that meets the following minimum performance specifications and include the following items. (See subsequent sections for details of equipment.)
 2. Computer Platform shall include:
 - a. 3Ghz Pentium 4 processor with 1GB of RAM
 - b. 80 GB free hard disk space available
 - c. Keyboard and optical mouse
 - d. Mouse and mouse pad
 - e. High Resolution (minimum 1280 x 1024), 17 flat panel display
 - f. Minimum 3 USB Ports
 - g. Serial, parallel port.
 - h. Floppy disk system (3.5 inch)
[3.5 inch disk to be Drive A:]
 - i. Read-write CD ROM/DVD.
 - j. Operating System Windows XP Professional or 2000 Professional
 - k. Ethernet Network Interface Card (10/100Mbs)

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- l. Internet Explorer 6.0 or later
- m. Microsoft Office Professional Edition, latest edition.
- n. DDC System Operator Workstation Application(s), latest revision.
- o. Any other software required to deliver the specified performance.

D. The DDC System Supplier shall provide the network cards and all interfaces as required.

3.9 PERIPHERAL EQUIPMENT FOR OPERATOR CONSOLES

- A. Provide all peripheral equipment for the operator console and central station, such as keyboard, mouse, colored monitor, various types of printers, disk storage systems, , phone modems, etc.
- B. A full function keyboard shall be furnished with the operator's console. The keyboard shall include a 96-character standard ASCII character set numeric keypad and 12 programmable function keys. The keyboard shall provide a means for the operator to interact with all command and applications software.
- C. Provide a three-button, multi-function mouse and mouse pad for graphic interaction with the computer system.

3.10 AUDIBLE ALARMS

- A. An audible alarm shall be provided at the central station operator's console and at various auxiliary operators' consoles as specified. The alarm shall incorporate the following features:
 - 1. Adjustable volume control.
 - 2. Disable switch to disable the alarm and relay when not in use.
 - 3. Relay to set off alarm and hold alarm "on" upon a momentary alarm contact.
 - 4. Reset switch to acknowledge and turn "off" alarm after each alarm and to reset relay.
 The acknowledgement for the alarm shall be documented by the DDC System Supplier.

3.11 COMPUTER PRINTER – Functionality shall be provided to transmit alarms to alpha numeric pagers via SMTP COMPUTER PRINTER

- A. This printer shall be a network printer HP Laserjet 2300N or equal and must be TCP/IP compatible used at all other operator consoles other than the Central Station.
- B. The console in the Engineer's Office shall have this printer.
- C. Provide the following equipment at the locations shown:
 - 1. Engineer's Office: HP Laserjet 2300N or equal and must be TCP/IP compatible
 - 2. The scaled-down operator console in Central Station shall have the following printers:
 - a. HP Lazerjet 1300 or equal and must be TCP/IP compatible.

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3. Printers for operator console. Provide the following printers for the main operator console.
 - a. Laser printer. Provide high quality laser printer with two paper trays with 500 page capacity each. Provide printer cable and 2 spare toner cartridges. Provide a minimum of four built-in fonts with capability to add font cartridges. The equipment shall be HP Lazerjet 2300N or equal and must be TCP/IP compatible.
 - b. Alarm printer. Provide 24 pin dot matrix printer for logging alarms from the system. This printer shall accept fan-fold paper with micro-perf edges. The paper size shall be 8-1/2 inches wide. Provide printer cable. The printer shall come on with "on line" status by default. The operator shall not have to put the printer on-line after turning on power. The printer shall be 75 percent duty. The print resolution shall be adjustable at the front and through software. The acceptable manufacturers are Epson, Panasonic, and Okidata.

3.12 MODEMS

- A. Provide phone modems as stated below. Phone lines to be provided by the Owner.
- B. Engineer's Office: Provide internal model, 56 KBPS V.34 standard (not V.FC or V.FAST). Provide cable and power supply and communication software.

3.13 DCP PORTABLE USER INTERFACE DEVICE – LAPTOP

- A. Computer Platform 3 GHz Pentium with 1 GB of RAM
- B. 40 GB free hard disk space available
- C. CD-RW
- D. Operating System Microsoft Windows 2000 Professional with SP3 or Microsoft Windows XP Professional with SP1
- E. Web Browser Microsoft Internet Explorer Version 6.0 or later. See Table 2 for more details.
- F. Communication Ethernet network interface card 10/100 Mbps (100 Mbps recommended) internal modem
- G. Minimum 3 USB Ports
- H. Internet Explorer 6.0 or later
- I. Microsoft Office Professional Edition, latest edition.
- J. DDC System Operator Workstation Application(s), latest revision.

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K. Any other software required to deliver the specified performance.

3.14 ENCLOSURES - GENERAL

A. Enclosures shall conform to the requirements of NEMA for the type specified. Finish color shall be the manufacturer's standard, unless otherwise indicated. Damaged surfaces shall be repaired and refinished using original type finish. Enclosures installed indoors shall be NEMA 1 or as specified for special applications. All enclosures shall be lockable.

3.15 NAMEPLATES

A. Laminated plastic nameplates shall be provided for all I/O devices furnished. Each nameplate shall identify the function, such as "mixed air controller" or supply air temperature sensor." Laminated plastic shall be 0.125 inch thick, white with black center core. Nameplates shall be a minimum of 1 inch by 3 inches, with a minimum 0.25 inch high engraved block lettering. Nameplates for devices smaller than 1 inch by 3 inches shall be attached by a nonferrous metal chain. All other nameplates shall be attached to the device. The name of the I/O device, as referenced in software, shall be placed on the nameplate.

B. Brass tags shall be minimum of 18 gauge polished brass, 1-1/2 inch diameter. Each tag shall include 0.25 inch high stamped black filled letters. Seton Type 250 BL or approved equal.

END OF PART 3

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PART 4 – BACS INFRASTRUCTURE

4.1 CONFIGURATION OF SYSTEMS

- A. The control panels/enclosures housing the controllers will be located, to the extent possible, to share vertical and horizontal wire-ways to facilitate and minimize the cost of home-runs to terminal equipment.
- B. Control panels shall be located in the equipment rooms, where practicable, and in locations such that the ambient conditions are between 50 and 90°F and 10 to 85% relative humidity. Control panels located in areas where conditions are outside of these ranges shall have enclosures outfitted with heating or cooling devices to provide the proper environmental conditions. Hoffman style enclosures with removable back plates and keyed, hinged covers shall be used. Enclosures shall be rated NEMA 4 when located in mechanical spaces and NEMA 1 when located in occupied spaces.
- C. The HVACR Shop must have quick, direct access to all control panels to maintain building integrity similar to that provided for fire emergencies without going through user spaces. Field panels will be located outside of user areas where practical. If field panels must be located in user areas, they shall be in areas with easy access. Protection and separation for user activities will be provided.

4.2 CONTROLLERS

- A. The controllers provided pursuant to this guideline shall meet the performance requirements for throughput, response time, point capacity, trend log capacity, etc., as stated in this section. The controllers shall also be configured and programmed to carry out the sequences of operation contained in the project documents.
- B. Since these guidelines with respect to controllers are performance oriented, rather than prescriptive, they will generally refer simply to “controllers” meaning computers capable of direct digital control. In those cases where distinguishing between controllers with differing capabilities is needed, the following nomenclature will be:
 1. Building-level controller. These are controllers that are connected to the campus backbone network and communicate over Ethernet using BACnet/IP. They will typically be used to control and monitor one or more large systems or be applied to other building-wide functions. They shall, at a minimum, meet the requirements of a BACnet Building Controller (B-BC).
 2. System-level controller. These controllers may, or may not, be directly connected to the campus backbone network. They will typically be dedicated to the control of a single large piece of equipment such as an air handler or chiller and a lab environment with fume hoods. They shall, at a minimum, meet the requirements of a BACnet Advanced Application Controller (B-AAC).

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3. Field-level controller. These controllers will be on a lower performance BACnet LAN such as MS/TP or ARCNET. They will typically be used for control of "unitary" devices such as VAV boxes, fan coil units, etc. They shall, at a minimum, meet the requirements of a BACnet Application Specific Controller (B-ASC).

4.3 UPDATING DATABASES AND GRAPHICS

- A. Controllers: Controllers shall be provided with a real-time operating system resident in ROM. It shall support all specified functions. It shall provide a command prioritization scheme to allow functional override of control functions. At a minimum, the following shall be provided:
 1. Real-time operating system software.
 2. Real-time clock/calendar and network time synchronization (except field-level controllers).
 3. Controller diagnostic software.
 4. DDC software.
 5. Alarm processing and buffering software.
 6. Energy management software.
 7. Data trending, reporting, and buffering software.
 8. I/O (physical and virtual) database. Inputs and outputs shall have the capability to be overridden for emergency modes and testing. If the design documentation does not specifically indicate for which points this is required, control vendor shall request in writing a list of such points. If this has not been requested, the vendor shall reprogram or reconfigure the systems as required during testing.
- B. Programming: The programming shall be logically segmented, documented, and titled, and expand on the specified sequence of operations. Each segment shall contain control logic for a specific controlled component of a system. This is to improve the ability of the end user to understand and interpret the logic easily. All software shall be submitted to the engineer and commissioning agent for review.
- C. Trending: To support commissioning and building data mining, the BACS shall be capable of trending and archiving all points on building- and system-level controllers at a minimum of 15 minute intervals. The BACS shall also have the capability of trending at least five points on each field-level controller at an interval of 15 minutes. The trend data shall be uploaded to a central database as needed to prevent buffer overflow in the controller. Controller memory capability, network architecture, and communications bandwidth shall be designed to account for this trending. The controls vendor shall provide control trends during start up and prior to functional performance testing of the systems. Reports shall be scheduled to output the data to a common format such as comma separated text, Microsoft formats such as Excel and Access, and portable database format. Trended data may also be archived in an Owner-accessible SQL database.
- D. Trend Graphs: Web-based software shall provide for displaying graphic plots of the trended values. The software shall support multiple scales, points and point types simultaneously. Control vendor shall configure these graphs in a logical manner for each system. Consult with

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the commissioning team members and project manager for required configuration. Provide a trend for every analog control loop that includes the setpoint, process variable, and control output.

- E. Real-time Plotting: Software shall be provided for real time plotting/graphing of multiple values in user-defined time intervals. These graphs will typically be used in commissioning to observe loop responses and system reactions. Control vendor shall configure these graphs in a logical manner for each system. Consult with the commissioning team members and project manager for required configuration.
- F. Web-based Graphic: In the event that a Web server is to be supplied to supply access to graphic displays, these screens shall be provided:
 - 1. Floor Plan Screens.
 - a. Provide floor plan screens for each floor and/or section of the building. Indicate the location of all equipment that is not located on the equipment room screens. Indicate the location of temperature sensors and VAV boxes associated with each temperature-controlled zone (i.e., VAV terminals, fan-coils, single-zone AHU's etc.) on the floor plan screens. Display the space temperature point adjacent to each temperature sensor symbol. Indicate room numbers as provided by Primary Care Health Services, Inc. Provide a graphic link from each zone and/or equipment symbol shown on the graphic floor plan screens to each corresponding equipment schematic graphic screen;
 - b. Provide floor plan screens for each mechanical equipment room and, if mechanical equipment is situated there, the roof. Indicate the location of each item of mechanical equipment. Provide a link from each equipment symbol shown on the plan view screen to each corresponding mechanical system schematic graphic;
 - c. If multiple floor plans are necessary to show all areas, provide a graphic building key plan. Use elevation views and/or plan views as necessary to graphically indicate the location of all of the larger scale floor plans. Link the graphic building key plan to larger scale partial floor plans. Provide links from each larger scale floor plan graphic to the building key plan and to each of the other graphic floor plan screens;
 - d. Provide a graphic site plan with links to and from each building graphic.
 - 2. System Schematic Screens.
 - a. Provide graphics for each dedicated outdoor air system. Indicate OA temperature and enthalpy, and mode of operation as applicable (i.e., occupied, unoccupied, warm-up, cool-down, etc.). Link screens for air handlers to the heating system and cooling system graphics. Link screens for supply and exhaust systems, if they are not available in a single graphic;
 - b. Provide a system schematic graphic for each HVAC subsystem controlled. Each I/O point in the project shall appear in at least one graphic. System graphics shall include flow diagrams with status, setpoints, current analog input and output

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values, operator commands, etc., as applicable. General layout of the system shall be schematically correct. I/O devices shall be shown in their schematically correct locations. Include appropriate engineering units for each displayed point value. Verbose names (English language descriptors) shall be included for each point on all graphics; this may be accomplished by the use of a pop-up window accessed by selecting the displayed point with the cursor. Indicate all adjustable setpoints on the applicable system schematic graphic or, if space does not allow, on a supplemental linked setpoint screen. All outputs shall be represented in terms of percent open and include a pop-up link to the control logic;

- c. Provide a graphic for each variable refrigerant flow unit. In addition to points associated with the unit, indicate mode of operation as applicable (i.e., normal occupied, unoccupied, warm-up, maximum heating, maximum cooling, etc.). Provide links between the applicable floor plan screen and this screen. Also provide links to the graphics representing the parent systems.
- d. Link screens for heating and cooling system graphics to utility history reports showing current and monthly energy usage, demands, peak values, etc.
- e. Link screens to all schedules and setpoints.

4.4 OPERATOR WORKSTATIONS/INTERFACES

- A. Graphic Operator’s Workstation:
- B. Operator Interfaces: Provide at least one alphanumeric human-machine interface (HMI) per mechanical room. The HMI shall allow the user to:
 - 1. Read the value of a measured variable.
 - 2. Start or stop equipment.
 - 3. Monitor the status of controlled equipment.
 - 4. Read the setpoint, reset and modify tuning parameters of control loops.
 - 5. Read all active alarms.
- C. Portable Operator Workstations: Control vendor shall provide one Portable Operator Workstation per project. The requirements shall be coordinated with the HVACR Shop on a project-by-project basis. Generally, a Portable Operator Workstation refers to a laptop computer that can fully run the client software.

4.5 APPLICATIONS SOFTWARE

- A. General: Provide the following applications programs, associated constraints, and interlocks as specified and as required by the I-O Summary Tables. The system shall perform all functions specified in the I-O summary tables by use of the appropriate application programs. All applications programs shall be coordinated, one with the other, to insure that no conflicts or contentions remain unresolved. Refer to control drains H8.## for sequences.
- B. Program Inputs: Select the appropriate program inputs listed for each application program to calculate the required program outputs. Where the specific program inputs are not available,

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such as no status indication called for on the I-O Summary Table, provide a "default" value to replace the missing input, thus allowing the application program to be tested. All analog inputs to application programs shall have an operator adjustable deadband to preclude short cycling or hunting.

C. **Scheduled Start-Stop Program:** This program shall start and stop equipment based on the time of the day and day of the week, including holidays. To eliminate power surges, an operator adjustable time delay shall be provided between consecutive start commands. The program must execute entirely on the equipment level controllers.

1. Program Inputs

- a. Day of week/holiday.
- b. Time of day.
- c. Summer and winter high-low limits.
- d. Summer and winter start-stop schedules.
- e. Summer or winter operation.
- f. Equipment status.
- g. Equipment constraints.

2. Program Outputs:

- a. Start signal (momentary or maintained as specified).
- b. Stop signal (momentary or maintained as specified).

D. **Optimum Start-Stop Program:**

- 1. Refer to control drawings.

E. **Duty Cycling Program:**

- 1. Refer to control drawings.

F. **Day-Night Setback Program.**

- 1. Refer to control drawings.

G. **Ventilation-Recirculation Program:**

- 1. Refer to control drawings.

H. **Control Sequences:** All control sequences shall be modifiable by the operator. It shall be possible to perform parameter value changes while the system is on-line and running. To provide for minimum impact in the system caused by changing a sequence while it is running, substantial changes to the control sequences may only be made at a the main operator's console. These changes may then be downloaded to any DCP for execution. Each DCP shall be supplied with a minimum of 15 percent free CPU capacity. The event that meeting this criteria would

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cause the splitting of critical control sequences, the next nearest DCP may contain the additional spare capacity for its neighbor.

I. Alarms

1. Alarms will be programmed in three levels minimum. These will differentiate between critical, abnormal, and maintenance.
2. Critical alarms would include equipment failures, smoke, etc. and would demand immediate attention by the highest level of the maintenance staff. These alarms would be printed immediately and would sound audible alarms as provided.
3. For critical alarms, the following capability shall be provided. If a critical alarm is not acknowledged in a predetermined Supplier and the DDC System Installer.
4. Exhaust fans in Engineered Fire Control Systems will normally not be affected by evidence of fire. They will continue to run or (operator adjustable) time, then the Operator's Console shall automatically call a user defined phone number and send an alarm on the operator's pager. This is necessary to ensure that the operator does not miss a critical alarm when he is away for short periods of time. Additionally, the alarm information may be displayed at the Security Station, other Operator Consoles, or communicated to the supervisor over the phone.
5. Abnormal alarm would include high and low temperature readings, acknowledged critical alarms, standby pump in operation, equipment being out of service for maintenance. These alarms would demand immediate attention by the next normal day-shift maintenance staff. These alarms would be displayed immediately at their assigned alarm point designation.
6. Maintenance alarms would include any other alarm such as dirty filters, run-time alarms for preprogrammed maintenance, etc. Run time alarms shall be set up on each device shown in the I/O summary tables. These alarms shall be disk filed in ASCII format with respect to date, time, system, point name and chronological event number. In addition, the date and time of the subsequent service work shall also be disk filed. These alarms would be printed only when requested.
7. All alarms shall be user-programmable to any level and to any alarm point destination (Operator Consoles). Alarm point destinations may be programmed to change automatically by the time of day, day of week, etc. All alarm point attributes high and low levels shall also be user-programmable.
8. In case of alarms not being acknowledged, the DDC System shall call up to three user-designed alpha pagers via STMP and relay an appropriate alarm message. This message shall be repeated a user-defined number of times.

END OF DDC PART 4

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PART 5 – BUILDING SYSTEMS

5.1 GENERAL

- A. This section of the guideline defines general physical Input/Output (I/O) requirements, sequences, and by inference some degree of system requirements related to how the BACS is applied to the building areas and systems. This section is organized by “element” of the building and systems and generally presented from higher to lower level elements. Strict adherence to these requirements will inevitably result in duplicate I/O (e.g., the leaving air side of a coil will frequently be the same as the supply air). The intent is obviously not to provide redundant sensors and the design professional is to exercise professional judgment and common sense in the application of these requirements.

5.2 BUILDING LEVEL

- A. Monitoring at the building level shall consist of the following points.
- Outside Environment:
 - Outside air temperature (OAT)
 - OA dewpoint
 - OA enthalpy (calculated)
- B. When power returns, the systems in the building shall be restarted in priority of criticality with a slight timing delay between starts to minimize the inrush power requirements.

5.3 ZONE LEVEL

A. General Occupied Zones

1. This refers generally to all spaces or zones not indicated otherwise below. With little exception, all zones of control will require a space sensor. Temperature sensors should generally correlate with the controlled zone. Zoning will generally be dictated by the system design.

The general guidance is that, unless indicated otherwise, most zones must have a space temperature sensor mounted in a representative location in the zone. Typically, all zone sensors will require a communication port to allow access to the BACS. Space control shall be networked using appropriate controllers.

2. In areas that the HVAC systems are scheduled, sensors should be provided with an override button except in public spaces. The override button shall:
 - a. Return the zone to occupied mode and request any equipment that serves the zone (e.g., the AHU serving a VAV box shall also be enabled). All other zones that are not occupied shall remain at minimum unoccupied flow setpoints as applicable;

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3. Private offices shall also include space temperature adjustment and an alphanumeric display with the sensor.
4. Space temperature control should, unless indicated otherwise, include a deadband between heating setpoints and cooling setpoints to minimize energy use and avoid "fighting." Also, in all cases, the heating and cooling within a zone must be coordinated to avoid simultaneous heating and cooling.
5. Fail position on the systems that serve these standard environments will generally fail to last condition/position.
6. Controls for a typical zone will be indicated below with the system that serves that zone. Generally, controllers serving variable refrigerant flow units that serve these spaces shall be field-level controllers fed from normal power. These controllers shall be networked with the system-level or building-level controllers.

B. Conference/Meeting/Auditorium Spaces

1. Control for meeting areas must be closely coordinated with the system design, but shall include temperature and ventilation control. Space control data shall be available on the BACS network. Environmental monitoring of the space shall include:
 - Space temperature
 - CO2 levels
2. Control shall include maintaining space temperature in the comfort range as defined by ASHRAE. Adequate ventilation shall be ensured by either occupancy sensing and indexing the ventilation to the ASHRAE 62 prescribed value upon occupancy, or by active control of CO2, modulating ventilation rates to maintain space CO2 below 900 PPM. Occupancy sensing shall generally be used for smaller facilities while active control will typically be used for larger facilities.

5.4 SYSTEM LEVEL

- A. General: Systems are generally composed of the components that are indicated following the systems. Many of the requirements of the systems are indicated as a part of those components. This section indicates requirements of the composite system. Specific requirements of the controller are listed with the system. General requirements shall include:
 1. Provide one OA sensor per controller panel on small systems.
- B. Dedicated Outdoor Air Systems: This generally refers to built-up or packaged air systems that have airflows in excess of 2,500 CFM. Terminal units such as fan coil units are indicated below. The requirements for supply air systems are:
 1. Discharge Air Temperature: All systems will require discharge air temperature sensors.
 2. Controller: One single controller with stand-alone capability shall control each air system. All programming controlling the components on the dedicated outdoor air system must be contained in a single controller and be programmed with one

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programming language. Only OA conditions (where network communication is greater than 100 kbps), and terminal-based reset parameters (as permitted by the project manager) may be conveyed over the network.

3. Interlock with Exhaust: Outdoor air systems that work in concert with exhaust systems shall generally be interlocked with that system.
4. Cabinet and Component Pressure Safety: When the dead-head of the fan is capable of damaging the wall, component, or duct associated with the system, upon closure of any isolation or fire damper, the air handler shall be protected with applicable high and/or low differential pressure safety switches.
5. Scheduling: When feasible in areas that are not occupied at all times and where code permits, the control sequence shall incorporate scheduling and setback to minimize energy use.
6. Start Up and Staging: The BACS shall provide for smooth and orderly start up and staging (where applicable) of the air-handling units. The starting of the fan and the opening of associated dampers shall be carefully coordinated. On 100% OA systems and systems with smoke dampers, end switches on the dampers shall prove damper status as open before allowing the fan capacity to ramp up at a controlled rate.

5.5 EXHAUST AIR SYSTEMS

- A. All: This generally refers to exhaust air systems that have airflows in excess of 2,500 CFM. The requirements for exhaust air systems are:
 1. Interlock With Supply: Exhaust air systems that work in concert with supply systems shall generally be interlocked with that system. Typically, exhaust system status will be required before the supply air system starts for 100% supply and exhaust systems serving areas that are required to be maintained negative to public spaces. Exhaust systems will typically be required to have their output limited until supply system status is indicated so as not to create an excessive negative pressure during start-up or during a trip of the supply source air handler.
 2. Start Up and Staging: The BACS shall provide for smooth and orderly start up and staging (where applicable) of the exhaust fans. The starting of the fan and the opening of associated dampers shall be carefully coordinated.
 3. Isolation: Exhaust systems shall be provided with automatic dampers to close and isolate the system when the system is off.
 4. Component Pressure Safety: When the dead-head of the fan is capable of damaging one of the components or duct associated with the system, upon closure of any isolation or fire damper, the system shall be protected with applicable high and/or low differential pressure safety switches hard wired to the starter circuit.
 5. Scheduling: When feasible in areas that are not occupied at all times and where code permits, the control sequence shall incorporate scheduling and setback to minimize energy use.

END OF DDC PART 5

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PART 6 - GENERAL SEQUENCES OF CONTROL

6.1 SCOPE

- A. This Section covers "General Sequences of Control" which are to be followed throughout the length of this contract.
- B. The control strategies on the control drawings shall be used in conjunction with the matrices for controller drawings herein for engineering the control systems and preparing the required control drawings.
- C. The control matrices and the sequence have been made to compliment each other. In addition, due to the nature of some controls, more or less hardware points may be necessary to accomplish the intent. The DDC System Supplier shall include all such hardware necessary to accomplish this task at no additional cost to the "unit costs". The DDC System Suppliers shall also treat the sequences and the matrices such that if a device is called for in one and not the other, it will be treated as if called for in both.
- D. Control of all HVAC equipment shall be through the DDC system unless each individual sequence specifies otherwise.
- E. In preparing the unit cost for the work, refer to Part 1 of this specification. Refer to paragraph 1.16 for other unit pricing requirements. The unit prices for these sequences are to include all valves, dampers, sensors, DCPs, DTCs, UCPs and other hardware required.
- F. When executing this work on this project, all Division 23 requirements for the project shall apply. In case of a discrepancy between the requirements of the project and this document, the most stringent requirement shall apply. If this happens, the matter shall at once be brought to the attention of the Architect/Engineer, the C.M., and the Owner.
- G. If significant changes are made to a control sequence for a future project, the control sequence nearest to the one desired shall be utilized. If significant changes in hardware are required, the same could be done for various control components from unit prices.
- H. The unit prices for the control sequences shall include the labor cost for the DDC System Supplier to interface with future project engineering and to provide detailed installation drawings that can be included in the future bid packages for obtaining installation prices.
- I. The control sequences given in this section will be used to price the additional work.
- J. The following Generic DDC Control Sequences are found at the end of this section

END OF PART 6

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PART 7 - GENERAL

7.1 INSTALLATION FOR ALL PACKAGES

A. Installation of Equipment

1. This paragraph describes requirements for installation of equipment on this project.
2. All system components and appurtenances shall be installed in accordance with the component manufacturer's and the DDC System Supplier's instructions. All necessary interconnections, services, and adjustments required for a complete and operable system shall be provided. All electrical work and devices shall comply with the National Electric Code and the requirements of the City of North Port, Florida, and all other applicable codes, and shall be installed by licensed journeyman electricians. Instrumentation and communications grounding shall be installed as necessary to preclude ground loops, noise, and surges from adversely affecting system operation.
3. All equipment shall be installed as required for an operational DDC system. In addition, the following additional precautions shall be followed and equipment shall be provided as required:
 - a. All room thermostats and humidistats shall be mounted 48"-54" above the finished floor except in corridors, stairways, and toilet rooms where they shall be mounted at 7' 0" above the finished floor. Refer to drawings for exemptions.
 - b. RTD assemblies shall be readily accessible and installed in a manner to allow easy replacement.
 - c. All RTDs installed in liquids shall be installed in stainless steel thermowalls.
 - d. RTDs used for space temperature sensing shall include housing suitable for wall mounting. The housing shall also shield the sensor from sources of radiation.
 - e. RTDs used for OA sensing shall have an aspirated radiation shield. The installation of OA sensors shall not be within the thermal boundary layer of the building, away from all building and automobile exhausts and shall not be mounted on concrete surfaces or on the roof.
 - f. OA temperature and humidity transmitter shall be provided for, as indicated on the drawings. The preferred location is on the northward facing side of a building or on a louver mullion to an air handling unit which is scheduled to operate continuously.
 - g. Averaging sensors in mixed air plenums should be installed across possible stratified air paths to insure a true average temperature.
 - h. Pipe temperature sensors shall be located at least ten (10) pipe diameters downstream of converging (mixing) pipe flows.
 - i. Temperature switches shall be installed in a manner similar to RTDs. Temperature switches shall be adjusted to the proper setpoint and shall be verified by calibration.
 - j. Relative humidity sensors shall have air guards when installed in air flows of more than 50 feet per minute across the sensor element.

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- k. Pressure sensors (all types) installed on liquid lines shall have drains. Pressure sensors installed on steam lines shall have drains and siphons or drains and condensate chambers. All pressure sensors shall have 3-way valve manifolds for isolation, venting, by-passing and taps for calibration. Pressure sensors shall be verified by calibration. Differential pressure sensors shall have nulling valves.
 - l. Pressure switches and differential pressure switches shall be adjusted to the proper setpoint and shall be verified by calibration. Pressure switches shall be mounted higher than the process connection.
 - m. All flowmeters shall be installed in accordance with ASME "Fluid Meters, Their Theory and Application" and other applicable industry standards. Do not install obstructions, such as temperature wells, in flowmeter "flow tubes".
 - n. Flow switches shall be installed in such a manner as to minimize any disturbance in the flow of fluid while maintaining reliable operation of the switch.
 - o. Potential and current transformers shall be installed in approved electrical enclosures.
 - p. Watthour and demand meters shall be installed in approved electrical enclosures, in motor starter enclosures or in electrical switchgear enclosures.
 - q. Position sensing potentiometers shall be selected and installed with type and mounting suited for the application to provide reliable operation.
 - r. End (Limit) Switches shall be selected and installed with type and mounting suited for the application to provide reliable switch operation.
 - s. Relays and contactors shall be installed in approved electrical enclosures, apparatus control panels, DCP panels, DTC panels, or in starter enclosures.
 - t. All temperature, humidity, and flow sensing transmitters and switches located in ductwork shall be installed in locations where the devices can be easily removed for routine maintenance and cleaning. This is particularly important for devices located in return air, exhaust air, and unfiltered air ductwork.
 - u. All wind speed and wind direction sensing devices shall be installed in a location as directed by the Architect.
- 4. All apparatus control panels, DCP panels and DTC panels shall be installed with the bottom 4 feet above the adjacent floor surface using an adjacent wall surface or using legs for free standing applications. All free standing outdoor enclosures using legs shall be secured rigidly to the supporting surface to minimize vibrations from winds.
 - 5. All penetrations in apparatus control panels and DTC panels located outdoors shall be from the bottom and shall be sealed to preclude entry of water using a silicone rubber sealant.
 - 6. The electrical portion of the DDC system shall be installed according to the following provisions:
 - a. Designated circuit breakers shall be provided in various electrical distribution panel boards for powering the DDC system.
 - b. The DDC System Installer shall provide all power wiring required for the various apparatus control panels and DDC panels (UCPs) and sensors from these circuit breakers.

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- c. The DDC System Installer shall provide supplemental branch circuitry and short circuit protection including panel boards as required for proper power distribution, protection and operation of his system and equipment.
 - d. All wiring, conduits, additionally panel boards, etc., required to provide power for the individual DDC equipment items shall comply with the National Electrical Code (NEC), the requirements of the City of Ithaca, NY, and other applicable codes.
 - e. All other electrical wiring shall comply with the National Electric Code, the requirements of the City of Ithaca, NY, and other applicable requirements and shall be installed by licensed journeyman electricians.
 - f. All peer-to-peer connections to the DDC system and the peer-to-peer network wiring and conduit shall be installed in locations identified by the DDC System Supplier in conjunction with the Architect/Engineer.
 - g. All DCPs, DTCs, and UCs, for the steam meters, shall be powered by normal/emergency power circuits.
 - h. All wiring shall be properly color-coded or identified (using terminal numbers) or both at the termination point in the DCP and DTC panels so that wiring between the panel and the sensing/control device can be easily identified.
7. All control wire and power wiring shall be provided by the DDC System Supplier. All wiring shall be installed in watertight EMT conduit with compression fittings. All copper and fiber network wiring shall be installed in watertight EMT conduit.
- a. AI, BI, AO and low voltage BO wires shall be routed uniformly in a singular bundle or through a single conduit.
 - b. Singular or multiple 120 volt BO wires shall be routed uniformly in a singular bundle or through a single conduit. High voltage (120 volt) BO wiring shall not be installed in the same bundle or conduit as AI, BI, or AO wiring unless otherwise specified.
 - c. Network wiring in exposed areas shall be installed in a conduit with no other wiring.
 - d. All conduit shall be EMT to within 3 feet of the device. Within 3 feet, flexible conduit may be employed. All conduit shall be supported from the building structure and should not lay on the ceiling.
 - e. All wiring and conduit shall be run either parallel or perpendicular to walls constructed in the area served. All takeoffs or junctions shall be made at 90 degree angles.
 - f. Pull strings shall be provided in all conduits for the future addition of wires.
 - g. Provide wire identification tags (using terminal numbers) in all DCP's and DTC's panels designating terminal connection points so that wiring between the panel and the sensing/control device can be easily identified. Tab 2 shows the Owner's approved scheme for panel and equipment identification.
 - h. All wiring in mechanical rooms shall be in conduit.
 - i. Low voltage and analog wiring shall be a minimum of 18 gauge twisted shielded pair.

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- j. 120 volt wiring shall be a minimum of 16 gauge twisted pair for relays or status wiring.
 - k. Communication wiring shall be a minimum of 22 gauge twisted low capacity.
8. The requirements concerning wire and conduit installation may also be found elsewhere in the specification and drawings.
 9. All junction boxes and pull stations in the DDC conduit system shall be identified.

B. Installation - Software

1. Load all software as specified and required for an operational DDC system, including data bases, operational parameters, and all specified programs. Upon successful completion of the Endurance Test, provide two spare copies on CD ROM of source (excluding the general purpose operating system and utility programs furnished by the computer manufacturers) and object modules for all accepted software including diagnostics. Two sets of software, on media usable with the portable tester, containing all DCP software and diagnostics shall be provided.

7.2 CHECK-OUT PROCEDURE

- A. Check-out shall be accomplished by the DDC System Supplier prior to start-up and testing with each individual package. The DDC System Supplier will be responsible to initiate the checkout procedure. The Owner shall be notified prior and, at their option, shall be present to witness.
- B. Two tests will be performed: A cold test and a hot test.
 1. Cold Test: In this test, the DDC System Supplier shall verify all wiring terminations prior to energizing any equipment.
 2. Hot Test: In this test, each control device, the DCP, DPT, and/or UCP shall be energized. Each sensor or transmitter shall be verified to be operating and connected to the proper termination address and each control device shall be operated.
- C. The DDC System Supplier shall jointly conduct the "cold" and "hot" tests. This will be demonstrated through a "Sensor/Operator Check-Off Procedure". The completed "check-off sheet" shall be turned over to the Architect/Engineer or Construction Manager as applicable prior to start-up and testing.
- D. The responsible DDC System Supplier shall repair any software problems, shorts, ground faults, leaks, wiring terminations, or tubing terminations as required, and shall repair or replace any defective parts.
- E. This check-out procedure shall be performed on all present and future packages.

7.3 START-UP AND TESTING

- A. The DDC System Supplier shall provide start-up, testing, and adjustment of the completed DDC System. The DDC System Supplier shall provide all personnel, equipment, instrumentation,

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and supplies necessary to perform all start-up and testing. Written notification of any planned start-up and testing shall be given to the Architect/Engineer and Owner at least 14 days in advance of such work, and in no case shall notice be given until after written approval of the test plans and procedures as specified has been received from the Architect/Engineer.

- B. The DDC System shall be started in stages to facilitate the construction schedule. The portions tested shall be as large as practically possible. Portions of the systems to be tested shall be started, operated, and tested independently of previously accepted portions of the system (i.e., before Local Project Specific LAN communication connections are made to the Main Facility-Wide LAN which may exist and be in operation at the time). Testing provided by the DDC System Supplier shall be designed to minimize interference between new and operating systems prior to making the actual LAN connection. The tests on new or add-on systems should include simulations of shared data or functions from the existing LAN system operation.

- C. Upon completion of the installation, the DDC System Supplier shall start up the system and perform all necessary testing and debugging operations. An acceptance test shall be performed in the presence of the Owner's representative and the Architect/Engineer. The acceptance test will be performed by the Owner's TAB Agency and/or commissioning agent and will cover sequence verification, sensor calibration, and point to point graphic verification. The University Building Engineer shall also be requested to be present to witness the start-up and testing. This test, as a minimum, shall include an operation/verification endurance test which verifies two weeks of completely automatic and stable system operation has occurred without an unexplained point failure or alarm. The system shall also provide comfort conditions in all spaces affected by the work.

- D. Startup Testing Report.
 - 1. Startup testing reports shall be submitted on a per system basis.
 - 2. Startup testing reports shall be the documented results of the executed startup testing plans.

- E. Upon receipt of a detailed punch list from the Architect/Engineer, an installation inspection report shall be prepared by the DDC System Supplier showing, by system, each outstanding item on the punch list. After all items appearing on the installation inspection report are completed, a second written request for system approval shall be made to the Architect/Engineer. As each or all items are approved, an appropriate notation shall be entered at the time of joint inspection on the system report, with countersignature of the Architect/Engineer and date. A copy of this report shall be made for the Owner.

- F. Where it is required for the DDC System Supplier to modify, alter, add or remove hardware or software programs to the system, or related accessories for the purpose of eliminating punch list items, off-line operation and testing to implement these items shall be performed as required until such time acceptable performance of the system has been established at no additional cost to the Contract.

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- G. Problems which occur within approved hardware, or software, shall be corrected in an appropriate fashion under warranty. Any such occurrence shall not void previous approval; however, the DDC System Supplier shall be responsible to attend to and remedy such items within the warranty period. The DDC System Supplier shall maintain appropriate logs, schedules, and reports to reflect these items and their redress.

7.5 TRAINING

- A. Upon completion of the work and acceptance by the Owner, factory representatives of the control manufacturer shall provide instruction to the Owner’s operating personnel who have responsibility for the mechanical systems and controls installed by the contractor. Training duration shall be 80 hours.
- B. The contractor shall make available to the Owner regular, scheduled training courses for ongoing training of the Owner’s operating personnel. Programs shall include hardware- and software-oriented courses as well as energy conservation and management courses.
- C. In addition to the normal training listed above, all vendors will be required to provide two weeks of training at the BACS manufacturer’s training facility for four people. This training only needs to be provided once for a particular set of installed BACS products. If a contractor has provided this training previously (on a previous project or directly with the Owner) then the additional training does not need to be provided again.

7.6 WARRANTY

- A. Except as otherwise specified, the Contractor shall warrant and guarantee all work against defects in materials, equipment, and workmanship for a period of one (1) year from the date of acceptance of the work as evidenced by a resolution to that effect by the Owner and for that period of time noted in special or extended warranties.
- B. The period of one (1) year shall be extended with respect to portions of the work first performed after substantial completion by the period of time between substantial completion and the actual performance of the work.
- C. The Contractor shall provide all recommended preventative maintenance of the materials, equipment, and workmanship as necessary and as described in the operating and maintenance manuals during the warranty period. In addition, the Contractor shall provide two (2) semi-annual service visits (i.e., one visit during the peak cooling season and one visit during the peak heating season) to test and evaluate the performance of the equipment. The Contractor shall provide a written report of the test and evaluation results. The service visits shall include but not be limited to:
 - 1. Checking and, if necessary, correcting the calibration of the sensors, transducers, and transmitters for air flow, liquid flow, pressure, temperature, and humidity;
 - 2. Checking and, if necessary, correcting the operation of the dampers and damper actuators;

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3. Checking and, if necessary, correcting the operation (i.e., monitoring and command) of the system points.

END OF DDC PART 7

END OF SECTION 230900

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SECTION 232113 - HVAC 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. This Section includes pipe and fitting materials, joining methods, special-duty valves, and specialties for the following:
1. Refrigerant piping
 2. Condensate-drain piping.
- B. Related Sections include the following:
1. Division 23 Section “Common Work for HVAC” for piping welding and common piping system components for HVAC.
 2. Division 23 Section “Vibration and Seismic Controls” for vibration controls including flexible piping connections to pumps, chillers, air handling units, rotating equipment and IFB coils.
- C. Where plumbing systems connect to equipment provided or installed under Division 23, work under Division 22 shall terminate the plumbing systems within 5 feet of final connection point of the equipment with a shutoff valves as specified in the plumbing valve section. Final connection to the equipment provided or installed under Division 23 shall be provided as part of this section. Final connection shall include additional valves, strainers, control valves, check valves, miscellaneous connections, etc. as shown on HVAC details, HVAC drawings, or as specified herein.

1.3 MECHANICAL SLEEVE SEALS

- A. Provide a sealing element made of synthetic rubber material, compounded to resist aging, ozone, sunlight, water and chemical action, and having a low temperature flexibility and resistance to high temperature environments. Elements shall be suitable for temperature ranges of minus 100°F to 600°F.
- B. Bolts and metal parts shall be made of carbon steel and zinc phosphate plated to resist corrosion. Pressure plates shall be cathodic type made of plastic.
- C. The seals shall be constructed so as to be air tight in aboveground installations, and to provide watertight sealing in below grade installations.

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D. Seals shall be manufactured by Thunderline Corporation or approved equivalent.

1.4 HVAC PIPING SYSTEM PRESSURE CLASSIFICATION

A. Piping, fittings, components, and equipment for the various HVAC piping systems shall meet the following pressure requirements:

HVAC Piping System	Operating Pressure	Component Pressure Rating	Drawing Symbol
1. Condensate rain piping	100	125	CD
2. Systems not listed	100	125	

1.5 QUALITY ASSURANCE

- A. ASME Compliance: Comply with ASME B31.9, "Building Services Piping," for materials, products, and installation. Safety valves and pressure vessels shall bear the appropriate ASME label. Fabricate and stamp air separators and expansion tanks to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 01.
- B. Piping and fitting materials shall conform to the specification standards of the recognized standards listed herein. References shall be to the latest edition in force at the time of bidding.
- C. Each pipe length shall have the manufacturer’s name cast, stamped, or rolled on.
- D. Each fitting shall have the manufacturer’s symbol and pressure rating cast, stamped, or rolled on.

PART 2 – PRODUCTS

2.1 PIPING AND FITTINGS MATERIAL SCHEDULE

A. Piping systems shall be constructed of the following materials as scheduled below, subject to approval by authorities having jurisdiction.

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Systems	Pipe	Fittings	Remarks
Cooling coil condensate piping	Type L hard drawn copper tubing with 95-5 tin antimony solder joints	Cast bronze or wrought copper with solder joints Flux and solder less than 0.2 percent lead	
	Schedule 40 PVC	Socket weld fittings	PVC not permitted in air plenums
Refrigerant piping	Type ACR hard drawn copper tubing with brazed joints	Wrought copper braze type fittings brazed with silver alloy equivalent to Sil-Fos	Fitting pressure rating per ANSI B16.22. Maximum pressure 295 psi.

2.2 DRAIN VALVE AND CAP

- A. Drain valve shall be equivalent to Watts B-6000-CC ¾ inch boiler drain valve.
- B. Drain valve cap shall be brass gasketed cap capable of withstanding continuous full line pressure.
- C. Provide drain valve and cap at the bases of risers, downstream of flow shut off valves and as shown on drawings and specified herein.

2.6 PIPE SLEEVES AND ESCUTCHEON PLATES

- A. Provide sleeves for piping passing through roofs, floors, ceilings, walls, partitions, air handling equipment, structural members, and other building parts.
- B. Sealant shall be equivalent to Dow Corning 795 Silicone Sealant for general purpose use and Dow Corning 786 Mildew Resistant Silicone Sealant for Kitchen, Food Preparation, Dining areas, and wet areas. Prime sleeves in accordance with manufacturer's recommendations.
- C. Sealant in one-hour and two-hour walls and one-hour and two-hour floors shall be equivalent to 3M Fire Barrier Water Tight Sealant 3000 WT. Sealants and foams shall be UL listed and installed in accordance with manufacturer's recommendations.
- D. Schedule of Sleeve Materials

Sleeve Type	Sleeve Material
1	18 gauge galvanized steel

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Sleeve Type	Sleeve Material
2	Std. weight galvanized steel pipe
3	Std. weight galvanized steel pipe with a continuously welded water stop of 1/4 inch steel plate extending a minimum of 2 inches from the outside of the sleeve. (F&S Mfg. Co. Figure 204 or approved equal.)
4	Cast iron pipe sleeve with center flange. (James B. Clow & Sons No. F-1430 & F-1435, or approved equal.)
5	Std. weight galvanized steel pipe with flashing clamp device welded to pipe sleeve or watertight sleeves. (Josam 1870-A2 with oakum and lead caulking as required, or approved equal.)
6	Metal deck and wall sleeves.

E. Escutcheon Plates

1. Schedule of Escutcheon Plate Materials

Location	Escutcheon Plate Material
Finished spaces	Anodized aluminum or chrome-plated brass
Unfinished spaces	Plain brass, cast iron or aluminum

2.7 MECHANICAL SLEEVE SEALS

- A. Provide a sealing element made of synthetic rubber material, compounded to resist aging, ozone, sunlight, water and chemical action, and having a low temperature flexibility and resistance to high temperature environments. Elements shall be suitable for temperature ranges of minus 100°F to 600°F.
- B. Bolts and metal parts shall be made of carbon steel and zinc phosphate plated to resist corrosion. Pressure plates shall be cathodic type made of plastic.
- C. The seals shall be constructed so as to be air tight in aboveground installations, and to provide watertight sealing in below grade installations.
- D. Seals shall be manufactured by Thunderline Corporation or approved equivalent.

2.8 PIPE FLASHING FITTINGS

- A Pipes passing through roof construction shall be provided with roof curb and piping portal.

PART 3 – EXECUTION

3.1 GENERAL

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- A. The drawings schematically indicate the size and location of piping. Piping system layout shall be modified as required to meet field conditions and facilitate coordination among contractors at no additional cost. Piping shall conform to the latest ASA code for pressure piping. Unless otherwise noted, all piping, valves, and associated fittings shall be concealed behind walls, above ceilings, or below floors.
- B. Provide adequate provision for expansion and contraction in portions of the piping systems, to prevent undue strains on piping and connected equipment.
- C. Provide approved bolted, gasketed flanges for each piece of equipment to permit easy connection and disconnection. Screwed unions with steel faces may be used on piping 1 inch and smaller.
- D. Inlet/outlet piping connections to coils and equipment shall be provided with offsets and shutoff valves arranged such that equipment can be serviced or removed without dismantling the pipe.
- E. Converging and diverging bullhead tee's will not be permitted in piping systems.
- F. "T" drill type fittings will not be permitted in piping systems.
- G. If, after systems are in operation, any coils or other apparatus become stratified or air-bound, they shall be repiped with necessary fittings, air vents or vacuum breakers at no additional cost. If connections are concealed behind construction, the responsible Contractor shall bear the cost of any demolition and refinishing construction required.
- H. Pitch water piping up in direction of flow to ensure adequate flow without air binding and to prevent noise and water hammer. Branch connections to mains shall be made in such a manner as to prevent air trapping and prevent free passage of air. Mains shall be laid out to meet field conditions, maintain adequate headroom and clear work of other Contractors.
- I. Miscellaneous drains, vents, reliefs, equipment/tank overflows and similar devices shall be run to the nearest floor drain or roof drain. Provide drain valves wherever required for complete drainage of water system piping, including the system side of pumps.
- J. Grooved Joint Installation: All grooved couplings, fittings, valves, and specialties shall be the products of a single manufacturer. Grooving tools shall be of the same manufacturer as the grooved components. The gasket style and elastomeric material (grade) shall be verified as suitable for the intended service as specified. Gaskets shall be manufactured by the grooved coupling manufacturer. Grooved ends shall be clean and free from indentations, projections, and roll marks in the area from pipe end to groove.

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- K. Provide accessible ball valve and 1/2 inch piping from top of closed loop system to nearby floor drain or mop basin for air venting.
- L. Any piping passing through roof construction shall be arranged to provide a minimum of 12 inches clearance from walls or other obstructions so as to permit proper flashing. Set pipe flashing fittings at a suitable level above the roof to permit proper termination of flashing.
- M. Provide hose drain connections on water systems downstream of floor main shut off valves.
- N. Provide dielectric fittings equivalent to EPCO Sales at all ferrous to non-ferrous pipe connections.

3.2 PIPING SYSTEM PRESSURE TESTS

- A. The following procedures shall be observed for piping system pressure tests:
 1. Preliminary testing, notification of inspectors and Contractor's responsibilities as specified in Section 23000, paragraph - CODES, PERMITS AND INSPECTIONS shall be observed.
 2. Take all due precautions to prevent damage to the building and its contents that may be incurred by such tests; repair or make good any damage caused by the tests at no additional cost to the Owner.
 3. Tests shall apply full test pressure to the piping for a sufficient period of time to detect leaks and defects.
 4. Tests shall be conducted prior to the installation of any required fitting insulation. If delicate control mechanisms, not including control valves, are installed in the piping, they shall be removed to prevent shock damage.
 5. The section of piping to be tested shall be brought up to the specified test pressure. If the test pressure falls more than the specified amount during the test period, the point of leakage shall be found, repaired and the test repeated. This procedure shall be repeated until the piping system has been proved absolutely tight.
 6. Leaks shall be repaired by removing the valve, fitting, joint or section which is leaking and reinstalling new materials and joints as specified. Use of mastic, "no-leak" compounds or other temporary means of repairing leaks shall not be permitted.
 7. System pumps, heat exchangers, etc., shall not be used until final flushing is done. Provide necessary temporary pumps required for flushing.

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B. Refrigerant Piping Pressure Test

1. Test piping prior to installation of insulation.
2. Purge piping system with nitrogen during installation.
3. Provide nitrogen and pressurize to 125 psig on the high side and 125 psig on the low side. Leak check with bubble solution. If pressure drops or if leaks are detected, provide new piping, fittings, and connections as required. System shall be recharged and purged with nitrogen before brazing. Locate leak in a manner approved by the EPA or other governing agencies.
4. Maintain the required test pressure for a sufficient length of time to enable an inspection of all joints and connections.
5. Tests shall be performed after installation of the piping systems and prior to acceptance of same.
6. Provide appropriate vacuum pump and evacuate refrigerant piping to 500 microns. Allow system to stand under vacuum of 500 microns for four (4) hours. If the vacuum reading remains unchanged, the system is ready to receive its charge of refrigerant.
7. Charge refrigerant systems in accordance with manufacturer’s recommendations.

3.3 PIPE SLEEVES

- A. Install sleeves in time to permit construction progress as scheduled.
- B. Grout sleeves to building structure for watertight fit.
- C. Schedule of Sleeve Lengths

Location	Sleeve Length
Floors	Equal to depth of floor construction and at least 1 inch above finished floor construction. In waterproof floor construction and equipment rooms, sleeves shall extend a minimum of 2 inches above finished floor construction
Roofs	Equal to depth of roof construction including insulation
Walls and Partitions	Equal to depth of construction and terminated flush with finished surfaces

- D. Schedule of Sleeve Caulking and Packing

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Caulking/ Packing Type	Caulking/Packing Requirements
A	Space between pipe and sleeve shall be packed with oakum and caulked watertight with lead.
B	Space between pipe or pipe covering and sleeve shall be caulked with an incombustible permanently plastic waterproof, non-staining compound leaving a smooth, finished appearance.
C	Verminproofing - space between pipe and sleeve shall be packed with industrial felt or fiberglass caulked at both ends with sealant according to manufacturer's recommendations. Verminproof insulation shall be minimum 1 inch thickness and shall be sections of foam glass as long as sleeves.

E. Schedule of Sleeve Applications

Location	Sleeve Type Thru Fire Rated Construction	Sleeve Type Thru Non-Fire Rated Construction	Sleeve Caulking and Packing Type
Membrane water-proof floor, roof and wall construction	5	5	C
Non-membrane waterproof floor, roof and wall construction where flashing is required	5	5	C
Interior walls, partitions, and floors	2	1 or 2	C
Exterior walls	---	3 or 4	C
Cellular metal deck floors	2	6	B
Precast concrete floor with poured concrete topping (NOTE: sleeves with flat flanges or guides which rest on top of precast slab required)	--	1	B

3.4 PIPE FLASHING FITTINGS

- A. Any pipe passing through roof construction shall be arranged to provide a minimum of 12 inches clearance from walls or other obstructions so as to permit proper flashing.

3.5 DRIP PANS FOR PROTECTION OF ELECTRICAL EQUIPMENT

- A. Examine the drawings and in cooperation with the Electrical Contractor confirm the final location of electrical equipment to be installed in the vicinity of piping. Plan and arrange

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overhead piping no closer than 2 feet from a vertical line to electric motors and controllers, switchboards, panel boards, or similar equipment. Piping is not permitted in electric equipment rooms, transformer rooms, switchgear rooms, nor telephone gear rooms.

- B. Where the installation of piping does not comply with the requirements of foregoing paragraph, where feasible, the piping shall be relocated.
- C. Where piping cannot be relocated, furnish gutters as follows:
 1. Provide and erect a gutter of 16 ounce cold rolled copper or heavy galvanized steel, under every pipe which is within 2 feet from a vertical line to any motor, electrical controllers, switchboards, panel boards, or the like.
 2. Each gutter shall be soldered and made watertight, properly suspended and carefully pitched to a convenient point for draining. Provide a 3/4 inch drain, with valve as directed, to nearest floor drain or slop sink, as approved.
 3. In lieu of such separate gutters, a continuous protecting sheet of similar construction adequately supported and braced, properly rimmed, pitched and drained, may be provided over any such motor, and extending 2 feet in all directions beyond the motor, over which such piping has to run.

3.6 BACKFLOW PREVENTERS

- A. Extend drain piping from backflow preventers to nearest floor drain.

3.7 FIELD QUALITY CONTROL

- A. Prepare hydronic piping according to ASME B31.9 and as follows:
 1. Leave joints, including welds, uninsulated and exposed for examination during test.
 2. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure. If temporary restraints are impractical, isolate expansion joints from testing.
 3. Flush hydronic piping systems with clean water; then remove and clean or replace strainer screens.
 4. Isolate equipment from piping. If a valve is used to isolate equipment, its closure shall be capable of sealing against test pressure without damage to valve. Install blinds in flanged joints to isolate equipment.
 5. Install safety valve, set at a pressure no more than one-third higher than test pressure, to protect against damage by expanding liquid or other source of overpressure during test.
- B. Perform the following tests on hydronic piping:

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1. Use ambient temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
 2. While filling system, use vents installed at high points of system to release air. Use drains installed at low points for complete draining of test liquid.
 3. Isolate expansion tanks and determine that hydronic system is full of water.
 4. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the system's working pressure. Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength or 1.7 times "SE" value in Appendix A in ASME B31.9, "Building Services Piping."
 5. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.
 6. Prepare written report of testing.
- C. Perform the following before operating the system:
1. Open manual valves fully.
 2. Inspect pumps for proper rotation.
 3. Set makeup pressure-reducing valves for required system pressure.
 4. Inspect air vents at high points of system and determine if all are installed and operating freely (automatic type), or bleed air completely (manual type).
 5. Set temperature controls so all coils are calling for full flow.
 6. Inspect and set operating temperatures of hydronic equipment, such as boilers, chillers, cooling towers, to specified values.
 7. Verify lubrication of motors and bearings.

END OF SECTION 232113

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SECTION 233416 - HVAC FANS

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:
 - a. Tube axial centrifugal fans.
 - b. Propeller fans.

1.3 PERFORMANCE REQUIREMENTS

- A. Project Altitude: Base fan performance ratings on 10 sea level.
- B. Operating Limits: Classify according to AMCA 99.
- C. Catalog rated for 15 percent greater static pressure than specified at air volume,
- D. Selected so that the specified air volume is greater than that at the apex of the fan pressure volume curve, and
- E. Selected to provide stable operation down to 85 percent of design volume operating at the required speed for the specified conditions.
- F. Brake horsepower for backward inclined bladed centrifugal fans shall not exceed 78 percent of motor nameplate horsepower times the NEMA service factor, and for forward curved bladed centrifugal fans shall not exceed 70 percent at specified duty.

1.4 SUBMITTALS

- A. Product Data: Include rated capacities, furnished specialties, and accessories for each type of product indicated and include the following:
 - a. Certified fan performance curves with system operating conditions indicated.
 - b. Certified fan sound-power ratings.
 - c. Motor ratings and electrical characteristics, plus motor and electrical accessories.
 - d. Material thickness and finishes, including color charts.
 - e. Dampers, including housings, linkages, and operators.

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- 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.
 - a. Wiring Diagrams: Power, signal, and control wiring.
 - b. Design Calculations: Calculate requirements for selecting vibration isolators and for designing vibration isolation bases.
 - c. Vibration Isolation Base Details: Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include auxiliary motor slides and rails, and base weights.
- C. Coordination Drawings: Show fan room layout and relationships between components and adjacent structural and mechanical elements. Show support locations, type of support, and weight on each support. Indicate and certify field measurements.
- D. Field quality-control test reports.
- E. Operation and Maintenance Data: For centrifugal fans to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

- A. 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.
- B. AMCA Compliance: Products shall comply with performance requirements and shall be licensed to use the AMCA-Certified Ratings Seal.
- C. NEMA Compliance: Motors and electrical accessories shall comply with NEMA 1.

1.6 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.
 - a. Belts: One set(s) for each belt-driven unit.

PART 2 – PRODUCTS

2.1 GENERAL

- A. Fan performance data shall be AMCA certified for sound and air performance.
- B. Fans shall be provided complete with motors and drives. Belt drive fans shall be provided with belt guards meeting OSHA requirements. Belt guards shall allow speed meas-

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urement at both fan and motor without removing guard. Each fan shall include an allowance for one pulley and belt change during balancing procedures.

- C. Provide appropriate weather covers for motors and belts where fans are exposed to weather.
- D. Fans shall be balanced statically and dynamically for maximum rated speed.
- E. Submit fan volume-pressure-horsepower curves for approval as indicated under shop drawings.
- F. Bearings shall be ball or roller anti-friction type with minimum L10 life of 160,000 hours.
- G. Where internal coating is indicated, factory apply Glidden SP24-CE double built epoxy 10 Mil to all metal surfaces including dampers, screens, curbs, in contact with air stream. Prepare steel surfaces by sandblasting per Steel Structure Painting Council Std. SP10-63 (near white). Use Type 316 stainless steel in lieu of coating at supplier's option or where required for component operation.
- H. Lubricate bearings for extended shutdown or storage and rotate shafts every four weeks until fans are put into permanent operation.
- I. Fans with motor operated dampers shall have access doors for access to both damper and motor.
- J. Drives shall be selected for a 1.5 service factor. Drives for motors over 3 horsepower shall be a minimum of two belts. Provide an allowance of one sheave change for balancing.

2.2 PRESSURE RATING

- A. Refer to Division 23 Section "Ductwork" for component and equipment ratings. All components, equipment, and specialties, etc., shall meet the component pressure rating listed.

2.3 TYPE "A" TUBE AXIAL FANS

- A. Tube axial fans equivalent to Chicago Vane Axial Adjustable Pitch with adjustable control pitch airfoil blades and direct drive totally enclosed air over motor location. Fan casing shall be heavy gauge welded steel with flanged connections, shielded bearings, external grease fittings, and external junction box with wiring to motor in conduit.
- B. Equip fan with casing access door and support legs or hanger brackets as required. Fans shall be provided with inlet and outlet cones.

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C. Approved manufacturers: Loren Cook, Greenheck, Twin City.

2.4 TYPE "D" BELT DRIVE PROPELLER FANS

- A. Belt drive sidewall type axial propeller fans equivalent to Greenheck Model SPFS for supply applications and Model SPFE for exhaust applications. Motor horsepower and fan capacities shall be as listed on the drawings.
- B. Propeller construction shall be die formed aluminum blades riveted to a steel hub. Hubs shall be secured to fan shaft with standard square key and setscrew or tapered bushings. Propellers shall be statically and dynamically balanced.
- C. Motors shall be heavy ball bearing type.
- D. Fan shafts shall be ground and polished and shall be mounted in permanently lubricated, sealed ball bearing pillow blocks. Bearings shall be selected for a minimum life of 200,000 hours. Drives shall be sized for a minimum of 150 percent of driven horsepower. Pulleys shall be fully machined cast iron type, keyed and securely attached to the wheel and motor shaft. Motor sheaves shall be adjustable for balancing.
- E. Fan panel shall be steel construction with pre-punched mounting holes, formed flanges, and a deep spun venturi. Panels shall be constructed to provide a lasting finish.
- F. Provide motor supports, vibration isolators, and OSHA fan guards. Fans shall bear the AMCA certified ratings for air performance. Provide backdraft dampers.
- G. Fans specified with 115 volt single phase motors shall be provided with speed controllers.
- H. Approved manufacturers: Loren Cook, Greenheck, Twin City.

2.5 SOURCE QUALITY CONTROL

- A. Sound-Power Level Ratings: Comply with 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. Fan Performance Ratings: Establish flow rate, pressure, power, air density, speed of rotation, and efficiency by factory tests and ratings according to AMCA 210, "Laboratory Methods of Testing Fans for Rating."

PART 3 – EXECUTION

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3.1 INSTALLATION

- A. Install centrifugal fans level and plumb.
- B. Concrete."
- C. Support suspended units from structure using threaded steel rods and isolation specified in 230548. Vibration-control devices are specified in Division 23 Section "Vibration and Seismic Controls."
- D. Install units with clearances for service and maintenance.
- E. Label fans according to requirements specified in Division 23 Section "Identification for HVAC Piping and Equipment."

3.2 CONNECTIONS

- A. Duct installation and connection requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of ducts and duct accessories. Make final duct connections with flexible connectors. Flexible connectors are specified in Division 23 Section "Air Duct Accessories."
- B. Install ducts adjacent to fans to allow service and maintenance.
- C. Install line-sized piping from scroll drain connection, with trap with seal equal to 1.5 times specified static pressure, to nearest floor drain.
- D. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- E. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.3 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
 - a. Verify that shipping, blocking, and bracing are removed.
 - b. 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.
 - c. Verify that cleaning and adjusting are complete.

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- d. 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.
 - e. Adjust belt tension.
 - f. Adjust damper linkages for proper damper operation.
 - g. Verify lubrication for bearings and other moving parts.
 - h. Verify that manual and automatic volume control and fire and smoke dampers in connected ductwork systems are in fully open position.
 - i. Refer to Division 23 Section "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing procedures.
 - j. Remove and replace malfunctioning units and retest as specified above.
- B. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.4 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain centrifugal fans. Refer to Division 01 Section "Demonstration and Training."

END OF SECTION 233416

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SECTION 233433.16 - INDUSTRIAL AIR CURTAINS

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 industrial air-curtain unit.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include rated capacities, operating characteristics, performance characteristics, and furnished specialties and accessories.
- B. Shop Drawings: For air curtain units.
 - 1. Include plans, elevations, sections, and 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. Include diagrams for power, signal, and control wiring.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For air curtains to include in operation and maintenance manuals.

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. Furnish one set of filters.
 - 2. Furnish one set of fan belts for each unit.

1.6 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of air curtains that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period (Nonheating Units): 24 months.

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PART 2 – PRODUCTS

2.1 INDUSTRIAL AIR-CURTAIN UNIT

A. Approved Manufacturers

1. Berner

B. Source Limitations: Obtain air curtain from single source from single manufacturer.

C. Housing:

1. Aluminum: Heavy-gauge, aluminum construction.
 - a. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
2. Fixed Discharge Nozzle: Integral part of the housing, containing fixed air-directional vanes.

D. Mounting Brackets: Steel, for wall mounting.

E. Air-Intake Grilles:

1. Grille: Integral part of and same material as the housing.
2. Insect Screen: Aluminum, removable.

F. Fans:

1. Centrifugal, forward curved, double width, double inlet.
2. Galvanized steel, Aluminum.
3. Statically and dynamically balanced.
4. Belt drive, equipped with belt guards, adjustable sheaves, and pulleys.

G. Filters:

1. Washable Panel Filters: Removable, stainless steel, baffle-type filters with spring-loaded fastening; with minimum 0.0781-inch- (1.984-mm-) thick, stainless steel filter frame.
2. Mounting Frames: Welded, galvanized steel with gaskets and fasteners and suitable for bolting together into built-up filter banks.

H. Controls:

1. Built-in Thermostat: Line voltage, factory installed and wired to junction box on air curtain.
2. Automatic Door Switch: Roller type, installed in door area to activate air curtain when door opens and to deactivate air curtain when door closes.
3. Start-Stop, Push-Button Switch: Manually activates and deactivates air curtain.

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4. Three-Speed Switch: Manually activates, deactivates, and controls air-curtain fan speed.
 5. Time-Delay Relay: Factory installed and adjustable to allow air curtain to operate from 0.5 seconds to 10 hours.
 6. Motor-Control Panel: Complete with motor starter, 115-V ac transformer with primary and secondary fuses, terminal strip, and NEMA 250, Type 1 enclosure with door-mounted, HAND-OFF-AUTO switch.
- I. Accessories:
1. Mounting Brackets: Adjustable mounting brackets for drum-type roll-up doors.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions 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, GENERAL

- A. Install air curtains with clearance for equipment service and maintenance.
- B. Comply with requirements for hangers and supports specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."

3.3 ELECTRICAL CONNECTIONS

- A. Connect wiring in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- B. Ground equipment in accordance with Section 260526 "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.
- D. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.

3.4 CONTROL CONNECTIONS

- A. Install control and electrical power wiring to field-mounted control devices.

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- B. Connect control wiring in accordance with Section 260523 "Control-Voltage Electrical Power Cables."

3.5 ADJUSTING

- A. Adjust belt tension.
- B. Adjust motor and fan speed to achieve specified airflow.
- C. Adjust discharge louver and dampers to regulate airflow.
- D. Adjust air-directional vanes.

3.6 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.
- C. Tests and Inspections:
 1. After installing air curtains completely, perform visual and mechanical check of individual components.
 2. After electrical circuitry has been energized, start unit to confirm motor rotation and unit operation. Certify compliance with test parameters.
 3. Inspect for water leaks.
 4. Test gas train and verify that there are no gas leaks.
 5. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Air-curtain unit will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

3.7 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain industrial air curtains.

END OF SECTION 233433.16

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SECTION 233439 - HIGH-VOLUME, LOW-SPEED FANS

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 high-volume, low-speed fans.

1.3 DEFINITIONS

- A. HVLS - High volume, low speed.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include rated capacities, furnished specialties, and accessories for each fan.
 - 2. Certified fan performance curves with system operating conditions indicated.
 - 3. Certified fan sound-power ratings.
 - 4. Motor ratings and electrical characteristics, plus motor and electrical accessories.
 - 5. Material thickness and finishes, including color charts.
 - 6. Fan speed controllers.
- B. Shop Drawings:
 - 1. Include plans, elevations, sections, and mounting details.
 - 2. Include details of equipment assemblies. Show dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include diagrams for power, signal, and control wiring.
- C. Delegated-Design Submittal: For each HVLS fan.
 - 1. Include design calculations and details for selecting product mounting components complying with performance requirements, design criteria, and analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 2. Design Calculations: Calculate static and dynamic loading due to equipment weight and operation required to select mounting components.

1.5 CLOSEOUT SUBMITTALS

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- A. Operation and Maintenance Data: For HVLS fans to include in emergency, operation, and maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Provide certification that manufacturer complies with the most recent edition of ISO 9001.
- B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by HVLS fan manufacturer.
 - 1. Each employee shall be certified by manufacturer for proper installation of systems, including, but not limited to, equipment, controls, and accessories indicated and furnished for installation.
 - 2. Installer certification shall be valid and current for duration of Project.
 - 3. Retain copies of Installer certificates on-site and make available on request.
 - 4. Each person assigned to Project shall have demonstrated past experience.
 - a. Demonstrated past experience with products being installed for period within three consecutive years before time of bid.
 - b. Demonstrated past experience on five projects of similar complexity, scope, and value.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in a clean and dry place.
- B. Comply with manufacturer's written rigging and installation instructions for unloading and moving to final installed location.
- C. Handle products carefully to prevent damage, breaking, denting, and scoring. Do not install damaged products.
- D. Protect products from weather, dirt, dust, water, construction debris, and physical damage.
 - 1. Retain factory-applied coverings on equipment to protect finishes during construction and remove just prior to operating unit.
 - 2. Cover unit openings before installation to prevent dirt and dust from entering inside of units. If required to remove coverings during unit installation, reapply coverings over openings after unit installation and remove just prior to operating unit.
- E. Replace installed products damaged during construction.

1.8 WARRANTY

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A. Warranty: Manufacturer and Installer agree to repair or replace components of fans that fail in materials or workmanship within specified warranty period.

1. Warranty Period:

- c. For Motor, Including Controls: Five year(s) from date of Substantial Completion.
- d. For Parts, Including Blades and Hub: Five year(s) from date of Substantial Completion.
- e. For Labor: One year(s) 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. UL Compliance: Listed and labeled to UL 507.
- C. CSA Compliance: Listed and labeled to CSA C22.2, No. 113.
- D. Comply with NFPA 13 requirements for HVLS fans.
- E. AMCA Compliance:
 - 1. Test HVLS fans according to AMCA 230.
 - 2. Certify HVLS fan performance according to AMCA 211.
- F. Performance Data: Comply with ANSI 230 test procedure standard, based on five rating points: 20-, 40-, 60-, 80-, and 100-percent of maximum speed. Comply with AMCA 211 for publication of performance data.

2.2 MANUFACTURERS

- A. Approved Manufacturers
 - 1. Big Ass Fans
 - 2. Greenheck
- B. Source Limitations: Obtain HVLS fans from single source from single manufacturer.

2.3 HIGH-VOLUME, LOW-SPEED FANS

- A. Description: Factory-assembled and -tested horizontal, non-ducted fan unit, consisting of large-diameter blade set, direct-drive electric motor, with variable-speed motor controller.
 - 1. Provide fan designed to circulate large air volume, vertically, at low velocity.

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2. Maximum Operating Temperature: 140 (60) deg F (deg C).
3. Controls: Provide wall-mounted keypad.
4. Provide variable speed motor controller speed control.
5. Mounting extension tube.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine conditions for compliance with requirements for installation tolerances and other conditions affecting HVLS fan performance, maintenance, and operations.
 1. Fan locations indicated on Drawings are approximate. Determine exact locations before roughing-in for mounting, control, and electrical connections.
- B. Examine roughing-in for mounting location, anchor-bolt sizes, and locations, to verify actual locations for mounting connections before installation of fan.
- C. Examine areas for suitable conditions where fan will be installed.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF HIGH-VOLUME LOW-SPEED FANS

- A. Install fan according to manufacturer's published instructions.
- B. Comply with NECA 1 and NFPA 70.
- C. Comply with NFPA 13 for installation of HVLS fans and maximum allowable fan diameter. Center HVLS fans between four adjacent sprinklers. Minimum vertical clearance from HVLS fan to sprinkler deflector is 3 feet (0.9 m).
- D. Comply with NFPA 72 and interlock HVLS fans to shut down upon receiving an alarm from fire alarm system.
- E. Equipment Mounting:
 1. Anchor fan to building structure with manufacturer's recommended mounting bracket for installed condition.
 2. Coordinate exact locations with sprinklers and lighter fixtures.
 3. Consult a licensed professional structural engineer for mounting methods and approval for mounting to the structure. Structure must be able to withstand the torque and forces generated by the fan.
 4. Comply with requirements for hangers and supports specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."

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- F. Install unit to permit access for maintenance.
- G. Install parts and accessories shipped loose.

3.3 ELECTRICAL CONNECTIONS

- A. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- B. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."
- C. Install electrical devices furnished by manufacturer, but not factory mounted, according to NFPA 70 and NECA 1.
- D. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.
- E. Install power wiring to field-mounted electrical devices, furnished by fan manufacturer, but not factory mounted.

3.4 CONTROL CONNECTIONS

- A. Connect control wiring to field-mounted control devices.
- B. Connect control wiring according to Section 260523 "Control-Voltage Electrical Power Cables."
- C. Connect control interlock wiring between HVLS fan and other equipment to provide a complete and functioning system.
- D. Install control devices furnished by manufacturer, but not factory mounted.
- E. Install control wiring to field-mounted control devices, furnished by fan manufacturer, but not factory mounted.
- F. Protect installed units from damage caused by other work.

3.5 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 the following tests and inspections:

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1. Fan Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Fan or components will be considered defective if fan or components do not pass tests and inspections.
- D. Prepare and submit 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.
 2. Verify that fan is secure on mountings and supporting devices and that connections to electrical systems are complete. Verify that proper thermal-overload protection is installed in motors, controllers and switches.
 3. Verify proper motor rotation direction and free fan rotation.
 4. Check bearing and gearbox lubrication.
 5. Verify proper fan rotation. Set rotation selector to blow vertically downward during heating season, and vertically upward during cooling season.

3.7 ADJUSTING

- A. Comply with requirements in Section 230593 "Testing, Adjusting, and Balancing for HVAC" for air-handling system testing, adjusting, and balancing.

3.8 CLEANING

- A. Clean equipment externally; remove coatings applied for protection during shipping and storage, foreign material, and oily residue according to manufacturer's written instructions. Following manufacturer's cleaning procedures, and clean with manufacturer-recommended cleaning products.

3.9 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain HVLS fans.
- B. Video training sessions, and provide electronic copy of video to Owner.

END OF SECTION 233439

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SECTION 238129 - VARIABLE-REFRIGERANT-FLOW HVAC SYSTEMS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes: VRF HVAC systems.
1. Indoor, concealed, ceiling-mounted units for ducting.
 2. Indoor, suspended, ceiling-mounted units.
 3. Indoor, dedicated outdoor air ventilation units.
 4. Outdoor, air-source heat-pump units.
 5. System controls.
 6. System refrigerant and oil.
 7. System condensate drain piping.
 8. System hydronic piping.
 9. System refrigerant piping.
 10. Metal hangers and supports.
 11. Metal framing systems.
 12. Fastener systems.
 13. Pipe stands.
 14. Outdoor equipment stands.
 15. Miscellaneous support materials.
 16. Piping and tubing insulation.
 17. System control cable.

1.2 DEFINITIONS

- A. Air-Conditioning System Operation: System capable of operation with all zones in cooling only.
- B. Heat-Pump System Operation: System capable of operation with all zones in either heating or cooling, but not with simultaneous heating and cooling zones that transfer heat between zones.
- C. Heat Recovery System Operation: System capable of operation with simultaneous heating and cooling zones that transfer heat between zones.
- D. HRCU: Heat Recovery Control Unit. HRCUs are used in heat recovery VRF HVAC systems to manage and control refrigerant between indoor units to provide simultaneous heating and cooling zones. "Heat Recovery Control Unit" is the term used by ASHRAE for what different manufacturers term as branch circuit controller, branch selector box, changeover box, flow selector unit, mode change unit, and other such terms.

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- E. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control, signaling power-limited circuits.
- F. Plenum: A space forming part of the air distribution system to which one or more air ducts are connected. An air duct is a passageway, other than a plenum, for transporting air to or from heating, ventilating, or air-conditioning equipment.
- G. Three-Pipe System Design: One high pressure refrigerant vapor line, one low pressure refrigerant vapor line, and one refrigerant liquid line connect a single outdoor unit or multiple manifold outdoor units in a single system to associated system HRCUs. One liquid line and refrigerant vapor line connect HRCUs to associated indoor units.
- H. Two-Pipe System Design: One refrigerant vapor line and one refrigerant liquid line connect a single outdoor unit or multiple manifold outdoor units in a single system to associated system HRCUs. One refrigerant liquid line and refrigerant vapor line connect HRCUs to associated indoor units. HRCUs used in two pipe systems act as an intermediate heat exchanger and include diverting valves and gas/liquid separators to move high and low pressure refrigerant between indoor units.
- I. VRF: Variable refrigerant flow.

1.3 ACTION SUBMITTALS

- A. Product Data: For VRF HVAC system components.
 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for indoor and outdoor units.
 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
 3. Include operating performance at design conditions and at extreme maximum and minimum outdoor ambient conditions.
 4. Include description of system controllers, dimensions, features, control interfaces and connections, power requirements, and connections.
 5. Include system operating sequence of operation in narrative form for each unique indoor- and outdoor-unit control.
 6. Include description of control software features.
 7. Include total refrigerant required and a comprehensive breakdown of refrigerant required by each system installed.
 8. Include refrigerant type and data sheets showing compliance with requirements indicated.
 9. For system design software.
 10. Indicate location and type of service access.

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B. Shop Drawings: For VRF HVAC systems.

1. Include plans, elevations, sections, and mounting 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 and details of refrigerant piping and tubing showing installation requirements for manufacturer-furnished divided flow fittings.
5. Include diagrams for power, signal, and control wiring.

C. Delegated Design Submittals:

1. Include design calculations for selecting vibration isolators and for designing vibration isolation bases.
2. Include design calculations with corresponding diagram of refrigerant piping and tubing sizing for each system installed.
3. Include design calculations with corresponding floor plans indicating that refrigerant concentration limits are within allowable limits of ASHRAE 15 and governing codes.
4. Include calculations showing that system travel distance for refrigerant piping and controls cabling are within horizontal and vertical travel distances set by manufacturer. Provide a comparison table for each system installed.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Plans, elevations, sections, and 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. Suspended ceiling components.
2. Structural floors, roofs and associated members to which equipment, piping, ductwork, cables, and conduit will be attached.
3. Size and location of initial access modules for acoustical tile.
4. Wall-mounted controllers located in finished space showing relationship to light switches, fire-alarm devices, and other installed devices.
5. Size and location of access doors and panels installed behind walls and inaccessible ceilings for products installed behind walls and requiring access.

B. Qualification Data:

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1. For Installer: Certificate from VRF HVAC system manufacturer certifying that Installer has successfully completed prerequisite training administered by manufacturer for proper installation of systems, including but not limited to, equipment, piping, controls, and accessories indicated and furnished for installation.
 - a. Retain copies of Installer certificates on-site and make available on request.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For VRF HVAC systems to include in emergency, operation, and maintenance manuals.
- B. Software and Firmware Operational Documentation:
 1. Software operating and upgrade manuals.
 2. Program Software Backup: On CD or DVD, USB media, or approved cloud storage platform, complete with data files.
 3. Device address list.
 4. Printout of software application and graphic screens.

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:
 - a. One set for each unit with replaceable filters.
 - b. One set for each unit type and unique size of washable filters.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 1. Nationally recognized manufacturer of VRF HVAC systems and products.
 2. Shipped VRF HVAC systems with similar requirements to those indicated for a continuous period of five years within time of bid.
 3. VRF HVAC systems and products that have been successfully tested and in use on at least three completed projects.
 4. Having complete published catalog literature, installation, and operation and maintenance manuals for all products intended for use.
 5. Having full-time in-house employees for the following:
 - a. Product research and development.
 - b. Product and application engineering.
 - c. Product manufacturing, testing, and quality control.
 - d. Technical support for system installation training, startup, commissioning, and troubleshooting of installations.
 - e. Owner training.

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- B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by VRF HVAC system manufacturer.
1. Each employee shall be certified by manufacturer for proper installation of systems, including, but not limited to, equipment, piping, controls, and accessories indicated and furnished for installation.
 2. Installer certification shall be valid and current for duration of Project.
 3. Retain copies of Installer certificates on-site and make available on request.
 4. Each person assigned to Project shall have demonstrated past experience.
 - a. Demonstrated past experience with products being installed for period within three consecutive years before time of bid.
 - b. Demonstrated past experience on five projects of similar complexity, scope, and value.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in a clean and dry place.
- B. Comply with manufacturer's written rigging and installation instructions for unloading and moving to final installed location.
- C. Handle products carefully to prevent damage, breaking, denting, and scoring. Do not install damaged products.
- D. Protect products from weather, dirt, dust, water, construction debris, and physical damage.
 1. Retain factory-applied coverings on equipment to protect finishes during construction and remove just prior to operating unit.
 2. Cover unit openings before installation to prevent dirt and dust from entering inside of units. If required to remove coverings during unit installation, reapply coverings over openings after unit installation and remove just prior to operating unit.
- E. Replace installed products damaged during construction.

1.9 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace equipment and components that fail(s) in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Structural failures.
 - b. Faulty operation.

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- c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
- 2. Warranty Period:
 - a. For Compressor: Five year(s) from date of Substantial Completion.
 - b. For Parts, Including Controls: Five year(s) from date of Substantial Completion.
 - c. For Labor: Five year(s) from date of Substantial Completion.

PART 2 – PRODUCTS

2.1 VRF HVAC SYSTEMS

- A. Approved Manufacturers”
 - 1. Trane
 - 2. Mitsubishi
- B. Source Limitations: Obtain products from single source from single manufacturer including, but not limited to, the following:
 - 1. Indoor and outdoor units, including accessories.
 - 2. Controls and software.
 - 3. HRCUs.
 - 4. Refrigerant isolation valves.
 - 5. Specialty refrigerant pipe fittings.

2.2 SYSTEM DESCRIPTION

- A. Direct-expansion (DX) VRF HVAC system(s) with variable capacity in response to varying cooling and heating loads. System shall consist of multiple indoor units, outdoor unit(s), piping, controls, and electrical power to make complete operating system(s) complying with requirements indicated.
 - 1. Two-pipe system design.
 - 2. System(s) operation, air-conditioning or heat pump as indicated on Drawings.
 - 3. Each system with one refrigerant circuit shared by all indoor units connected to system.
- 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. AHRI Compliance: System and equipment performance certified according to AHRI 1230
- D. ASHRAE Compliance:

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1. ASHRAE 15: For safety code for mechanical refrigeration.
 2. ASHRAE 62.1: For indoor air quality.
 3. ASHRAE/IES 90.1 Compliance: For system and component energy efficiency.
- E. UL Compliance: Comply with UL 1995.

2.3 PERFORMANCE REQUIREMENTS

A. Service Access:

1. Provide and document service access requirements.
2. Locate equipment, system isolation valves, and other system components that require service and inspection in easily accessible locations. Avoid locations that are difficult to access if possible.
3. Where serviceable components are installed behind walls and above inaccessible ceilings, provide finished assembly with access doors or panels to gain access. Properly size the openings to allow for service, removal, and replacement.
4. If less than full and unrestricted access is provided, locate components within an 18-inch (450-mm) reach of the finished assembly.
5. Where ladder access is required to service elevated components, provide an installation that provides for sufficient access within ladder manufacturer's written instructions for use.
6. Comply with OSHA regulations.

B. System Design and Installation Requirements:

1. Design and install systems indicated according to manufacturer's recommendations and written instructions.
2. Where manufacturer's requirements differ from requirements indicated, contact Architect for direction. The most stringent requirements should apply unless otherwise directed in writing by Architect.

C. Isolation of Equipment: Provide isolation valves to isolate each indoor unit and outdoor unit for service, removal, and replacement without interrupting system operation.

D. System Capacity Ratio: The sum of connected capacity of all indoor units shall be within the following range of outdoor unit rated capacity:

1. Not less than 50 percent.
2. Not more than 130 percent.
3. Range acceptable to manufacturer.

E. System Turndown: Stable operation down to 20 percent of outdoor-unit capacity.

F. System Auto Refrigerant Charge: Each system shall have an automatic refrigerant charge function to ensure the proper amount of refrigerant is installed in system.

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G. Outdoor Conditions:

1. Suitable for outdoor ambient conditions encountered.
 - a. Design equipment and supports to withstand wind loads of governing code.
 - b. Provide corrosion-resistant coating for components and supports where located in coastal or industrial climates that are known to be harmful to materials and finishes.
2. Maximum System

2.4 INDOOR, CONCEALED, CEILING-MOUNTED UNITS FOR DUCTING

A. Description: Factory-assembled complete unit with components, piping, wiring, and controls required for mating to ductwork, piping, power, and controls field connections.

1. Insulation: Manufacturer's standard internal insulation to provide thermal resistance and prevent condensation.
2. Duct Connections: Extended collar or flange, or designated exterior cabinet surface, designed for attaching field-installed ductwork.
3. Mounting: Manufacturer-designed provisions for field installation.
4. Internal Access: Removable panels or hinged doors of adequate size for field access to internal components for inspection, cleaning, service, and replacement.

B. DX Coil Assembly:

1. Coil Casing: Aluminum, galvanized, or stainless steel.
2. Coil Fins: Aluminum, mechanically bonded to tubes, with arrangement required by performance.
3. Coil Tubes: Copper, of diameter and thickness required by performance.
4. Expansion Valve: Electronic modulating type with linear or proportional characteristics.
5. Unit Internal Tubing: Copper tubing with brazed joints.
6. Unit Internal Tubing Insulation: Manufacturer's standard insulation, of thickness to prevent condensation.
7. Field Piping Connections: Manufacturer's standard.
8. Factory Charge: Dehydrated air or nitrogen.
9. Testing: Factory pressure tested and verified to be without leaks.

C. Drain Assembly:

1. Pan: Non-ferrous material, with bottom sloped to low point drain connection.
2. Condensate Removal: Unit-mounted pump or other integral lifting mechanism, capable of lifting drain water to an elevation above top of cabinet.
3. Field Piping Connection: Non-ferrous material.

D. Fan and Motor Assembly:

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1. Fan(s):
 - a. Direct-drive arrangement.
 - b. Single or multiple fans connected to a common motor shaft and driven by a single motor.
 - c. Fabricated from non-ferrous components or ferrous components with corrosion-resistant finish.
 - d. Wheels statically and dynamically balanced.
 2. Motor: Brushless dc or electronically commutated with permanently lubricated bearings.
 3. Motor Protection: Integral protection against thermal, overload, and voltage fluctuations.
 4. Speed Settings and Control: Two (low, high), three (low, medium, high), or more than three speed settings or variable speed with a speed range of least 50 percent.
 5. Vibration Control: Integral isolation to dampen vibration transmission.
- E. Filter Assembly:
1. Access: Bottom, side, or rear to accommodate field installation without removing ductwork and to accommodate filter replacement without need for tools.
 2. Efficiency: ASHRAE 52.2, MERV 13.
 3. Media:
 - a. Replaceable: Extended surface, panel, or cartridge with antimicrobial treatment fiber media.
 - b. .
- F. Unit Accessories:
1. Remote Room Temperature Sensor Kit: Wall-mounted, hardwired room temperature sensor kit for use in rooms that do not have room temperature measurement.
- G. Unit Controls:
1. Enclosure: Metal, suitable for indoor locations.
 2. Factory-Installed Controller: Configurable digital control.
 3. Factory-Installed Sensors:
 - a. Unit inlet air temperature.
 - b. Coil entering refrigerant temperature.
 - c. Coil leaving refrigerant temperature.
 - d. Unit leaving air temperature.
 4. Features and Functions:
 - a. Self-diagnostics.
 - b. Time delay.
 - c. Auto-restart.
 - d. External static pressure control.

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- e. Auto operation mode.
 - f. Manual operation mode.
 - g. Filter service notification.
 - h. Power consumption display.
 - i. Drain assembly high water level safety shutdown and notification.
 - j. Run test switch.
 - 5. Communication: Network communication with other indoor and outdoor units.
 - 6. Cable and Wiring: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram.
 - 7. Field Connection: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram.
- H. Unit Electrical:
- 1. Enclosure: Metal, suitable for indoor locations.
 - 2. Field Connection: Single point connection to power unit and integral controls.
 - 3. Disconnecting Means: Factory-mounted circuit breaker or switch.
 - 4. Control Transformer: Manufacturer's standard. Coordinate requirements with field power supply.
 - 5. Wiring: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram.

2.5 INDOOR, DEDICATED OUTDOOR AIR VENTILATION UNITS

- A. Description: Factory-assembled complete unit with components, piping, wiring, and controls required for mating to ductwork, piping, power, and controls field connections.
- 1. Specially designed for up to 100 percent outdoor air entering unit.
- B. Cabinet:
- 1. Insulation: Manufacturer's standard internal insulation to provide thermal resistance and prevent condensation.
 - 2. Duct Connections: Extended collar or flange, or designated exterior cabinet surface, designed for attaching field-installed ductwork.
 - 3. Mounting: Manufacturer-designed provisions for field installation.
 - 4. Internal Access: Removable panels or hinged doors of adequate size for field access to internal components for inspection, cleaning, service, and replacement.
 - 5. Corrosion-resistant finish: Coating with documented salt spray test performance of 1000 hours according to ASTM B117 surface scratch test (SST) procedure. Provide Microguard or equivalent.
- C. DX Coil Assembly:
- 1. Coil Casing: Aluminum, galvanized, or stainless steel.

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2. Coil Fins: Aluminum, mechanically bonded to tubes, with arrangement required by performance.
 3. Coil Tubes: Copper, of diameter and thickness required by performance.
 4. Expansion Valve: Electronic modulating type with linear or proportional characteristics.
 5. Unit Internal Tubing: Copper tubing with brazed joints.
 6. Unit Internal Tubing Insulation: Manufacturer's standard insulation, of thickness to prevent condensation.
 7. Field Piping Connections: Manufacturer's standard.
 8. Factory Charge: Dehydrated air or nitrogen.
 9. Testing: Factory pressure tested and verified to be without leaks.
- D. DX Coil Assembly for Reheat Applications: Provide units with a reheat coil where indicated on Drawings.
1. Coil Casing: Aluminum, galvanized, or stainless steel.
 2. Coil Fins: Aluminum, mechanically bonded to tubes, with arrangement required by performance.
 3. Coil Tubes: Copper, of diameter and thickness required by performance.
 4. Expansion Valve: Electronic modulating type with linear or proportional characteristics.
 5. Unit Internal Tubing: Copper tubing with brazed joints.
 6. Unit Internal Tubing Insulation: Manufacturer's standard insulation.
 7. Field Piping Connections: Manufacturer's standard.
 8. Factory Charge: Dehydrated air or nitrogen.
 9. Testing: Factory pressure tested and verified to be without leaks.
- E. Drain Assembly:
1. Pan: Non-ferrous material, with bottom sloped to low point drain connection.
 2. Condensate Removal: Unit-mounted pump or other integral lifting mechanism, capable of lifting drain water to an elevation above top of cabinet.
 3. Field Piping Connection: Non-ferrous material.
- F. Fan and Motor Assembly:
1. Fan(s):
 - a. Direct-drive arrangement.
 - b. Single or multiple fans connected to a common motor shaft and driven by a single motor.
 - c. Fabricated from non-ferrous components or ferrous components with corrosion protection finish.
 - d. Wheels statically and dynamically balanced.

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2. Motor: Brushless dc or electronically commutated with permanently lubricated bearings.
3. Motor Protection: Integral protection against thermal, overload, and voltage fluctuations.
4. Speed Settings and Control: Two (low, high), three (low, medium, high), or more than three speed settings or variable speed with a speed range of least 50 percent.
5. Vibration Control: Integral isolation to dampen vibration transmission.

G. Filter Assembly:

1. Access: Bottom, side, or rear to accommodate field installation without removing ductwork and to accommodate filter replacement without need for tools.
2. Efficiency: ASHRAE 52.2, MERV 8.
3. Replaceable Media: Extended surface, panel, or cartridge with antimicrobial treatment fiber media.

H. Unit Accessories:

1. Motorized Inlet Damper Kit: Low-leakage damper with spring return electric actuator to fail closed on loss of power. Damper controlled by unit to open when unit is operating and close when unit off.
2. .

I. Unit Controls:

1. Enclosure: Metal, similar to enclosure, and suitable for indoor locations.
2. Factory-Installed Controller: Configurable digital control.
3. Features and Functions: Self-diagnostics, time delay, auto-restart, external static pressure control, auto operation mode, manual operation mode, filter service notification, power consumption display, drain assembly high water level safety shutdown and notification, run test switch.
4. Communication: Network communication with other indoor units and outdoor unit(s).
5. Cable and Wiring: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram.
6. Field Connection: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram.

J. Unit Electrical:

1. Enclosure: Metal, similar to enclosure, and suitable for indoor locations.
2. Field Connection: Single point connection to power entire unit and integral controls.

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3. Disconnecting Means: Factory-mounted circuit breaker or switch, complying with NFPA 70.
4. Control Transformer: Manufacturer's standard. Coordinate requirements with field power supply.
5. Wiring: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram.

2.6 OUTDOOR, AIR-SOURCE HEAT-PUMP UNITS

- A. Description: Factory-assembled and -tested complete unit with components, piping, wiring, and controls required for mating to piping, power, and controls field connections.
 1. Specially designed for use in systems with either all heating or all cooling demands, but not for use in systems with simultaneous heating and cooling.
 2. Systems shall consist of one unit, or multiple unit modules that are designed by variable refrigerant system manufacturer for field interconnection to make a single refrigeration circuit that connects multiple indoor units.
 3. All units installed shall be from the same product development generation.
- B. Cabinet:
 1. Galvanized steel and coated with a corrosion-resistant finish.
 - a. Coating with documented salt spray test performance of 1000 hours according to ASTM B117 surface scratch test (SST) procedure. Provide Protec Rust-Grip or equivalent.
 2. Mounting: Manufacturer-designed provisions for field installation.
 3. Internal Access: Removable panels or hinged doors of adequate size for field access to internal components for inspection, cleaning, service, and replacement.
- C. Compressor and Motor Assembly:
 1. One or more positive-displacement, direct-drive and hermetically sealed scroll compressor(s) with inverter drive and turndown to 15 percent of rated capacity.
 2. Protection: Integral protection against the following:
 - a. High refrigerant pressure.
 - b. Low oil level.
 - c. High oil temperature.
 - d. Thermal and overload.
 - e. Voltage fluctuations.
 - f. Phase failure and phase reversal.
 - g. Short cycling.
 - h. .
 3. Speed Control: Variable to automatically maintain refrigerant suction and condensing pressures while varying refrigerant flow to satisfy system cooling and heating loads.

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4. Vibration Control: Integral isolation to dampen vibration transmission.
 5. Oil management system to ensure safe and proper lubrication over entire operating range.
 6. Crankcase heaters with integral control to maintain safe operating temperature.
 7. Fusible plug.
- D. Condenser Coil Assembly:
1. Plate Fin Coils:
 - a. Casing: Aluminum, galvanized, or stainless steel.
 - b. Fins: Aluminum or copper, mechanically bonded to tubes, with arrangement required by performance.
 - c. Tubes: Copper, of diameter and thickness required by performance.
 2. Coating: Corrosion resistant. Provide Microguard or equivalent coating.
- E. Condenser Fan and Motor Assembly:
1. Fan(s): Propeller type.
 - a. Direct-drive arrangement.
 - b. Fabricated from non-ferrous components or ferrous components with corrosion protection finish to match performance indicated for condenser coil.
 - c. dynamically balanced.
 2. Fan Guards: Removable safety guards complying with OSHA regulations. If using metal materials, coat with corrosion-resistant coating to match performance indicated for condenser coil.
 3. Motor(s): Brushless dc or electronically commutated with permanently lubricated bearings and rated for outdoor duty.
 4. Motor Protection: Integral protection against thermal, overload, and voltage fluctuations.
 5. Speed Settings and Control: Variable speed with a speed range of least 75 percent.
 6. Vibration Control: Integral isolation to dampen vibration transmission.
- F. Drain Pan: If required by manufacturer's design, provide unit with non-ferrous drain pan with bottom sloped to a low point drain connection.
- G. Unit Controls:
1. Enclosure: Manufacturer's standard, and suitable for unprotected outdoor locations.
 2. Factory-Installed Controller: Configurable digital control.
 3. Factory-Installed Sensors:
 - a. Refrigerant suction temperature.
 - b. Refrigerant discharge temperature.
 - c. Outdoor air temperature.

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- d. Refrigerant high pressure.
- e. Refrigerant low pressure.
- f. Oil level.
- 4. Features and Functions: Self-diagnostics, time delay, auto-restart, fuse protection, auto operation mode, manual operation mode, night setback control, power consumption display, run test switch equalize run time between multiple same components.
- 5. Communication: Network communication with indoor units and other outdoor unit(s).
- 6. Cable and Wiring: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram.
- 7. Field Connection: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram.

H. Unit Electrical:

- 1. Enclosure: Metal, similar to enclosure, and suitable for unprotected outdoor locations.
 - 2. Field Connection: Single point connection to power entire unit and integral controls.
 - 3. Disconnecting Means: Factory-mounted circuit breaker or switch, complying with NFPA 70.
 - 4. Control Transformer: Manufacturer's standard. Coordinate requirements with field power supply.
 - 5. Wiring: Manufacturer's standard with each connection labeled and corresponding to a unit-mounted wiring diagram.
- I. Unit Hardware: Zinc-plated steel, or stainless steel. Coat exposed surfaces with additional corrosion-resistant coating if required to prevent corrosion when exposed to salt spray test for 1000 hours according to ASTM B117.

J. Unit Piping:

- 1. Unit Tubing: Copper tubing with brazed joints.
- 2. Unit Tubing Insulation: Manufacturer's standard insulation, of thickness to prevent condensation.
- 3. Field Piping Connections: Manufacturer's standard.
- 4. Factory Charge: Dehydrated air or nitrogen.
- 5. Testing: Factory pressure tested and verified to be without leaks.

PART 3 – EXECUTION

3.1 EXAMINATION

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- 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 products before installation. Reject products that are wet, moisture damaged, or mold damaged.
- C. Examine roughing-in for piping and tubing to verify actual locations of connections before equipment installation.
- D. Examine roughing-in for ductwork to verify actual locations of connections before equipment installation.
- E. Examine roughing-in for wiring and conduit to verify actual locations of connections before equipment installation.
- F. Examine walls, floors, roofs, and outdoor pads for suitable conditions where equipment will be installed.
- G. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- H. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 EQUIPMENT INSTALLATION, GENERAL

- A. Clearance:
 - 1. Maintain manufacturer's recommended clearances for service and maintenance.
 - 2. Maintain clearances required by governing code.
- B. Loose Components: Install components, devices, and accessories furnished by manufacturer, with equipment, which are not factory mounted.

3.3 INSTALLATION OF INDOOR UNITS

- A. Install units to be level and plumb while providing a neat and finished appearance.
- B. Unless otherwise required by VRF HVAC system manufacturer, support ceiling-mounted units from structure above using threaded rods; minimum rod size of 3/8 inch (10 mm).
- C. Adjust supports of exposed and recessed units to draw units tight to adjoining surfaces.
- D. Protect finished surfaces of ceilings, floors, and walls that come in direct contact with units. Refinish or replaced damaged areas after units are installed.

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- E. In rooms with ceilings, conceal piping and tubing, controls, and electrical power serving units above ceilings.
- F. In rooms without ceiling, arrange piping and tubing, controls, and electrical power serving units to provide a neat and finished appearance.
- G. Provide lateral bracing if needed to limit movement of suspended units to not more than 0.25 inch (13 mm).
- H. For floor- and wall-mounted units that are exposed, conceal piping and tubing, controls, and electrical power serving units within walls.

3.4 INSTALLATION OF OUTDOOR UNITS

- A. Install units to be level and plumb while providing a neat and finished appearance.
- B. Install outdoor units on support structures indicated on Drawings.
- C. Pad-Mounted Installations: Install outdoor units on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete."
 - 1. Attachment: Install anchor bolts to elevations required for proper attachment to supported equipment.
 - 2. Grouting: Place grout under equipment supports and make bearing surface smooth.
- D. Roof-Mounted Installations: Install outdoor units on equipment supports specified in Section 077200 "Roof Accessories." Anchor units to supports with removable, stainless steel fasteners.

3.5 GENERAL REQUIREMENTS FOR PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping and tubing systems. Install piping and tubing as indicated unless deviations to layout are approved on coordination drawings.
- B. Install piping and tubing in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping and tubing at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping and tubing above accessible ceilings to allow sufficient space for ceiling panel removal.

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- E. Install piping and tubing to permit valve servicing.
- F. Install piping and tubing at indicated slopes.
- G. Install piping and tubing free of sags.
- H. Install fittings for changes in direction and branch connections.
- I. Install piping and tubing to allow application of insulation.
- J. Install groups of pipes and tubing parallel to each other, spaced to permit applying insulation with service access between insulated piping and tubing.
- K. Install sleeves for piping and tubing penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 230517 "Sleeves and Sleeve Seals for HVAC Piping."
- L. Install escutcheons for piping and tubing penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 230518 "Escutcheons for HVAC Piping."

3.6 INSTALLATION OF SYSTEM CONDENSATE DRAIN PIPING

- A. General Requirements for Drain Piping and Tubing:
 - 1. Install a union in piping at each threaded unit connection.
 - 2. Install an adjustable stainless steel hose clamp with adjustable gear operator on unit hose connections. Tighten clamp to provide a leak-free installation.
 - 3. If required for unit installation, provide a trap assembly in drain piping to prevent air circulated through unit from passing through drain piping. Comply with more stringent of the following:
 - a. Details indicated on Drawings.
 - b. Manufacturer's requirements.
 - c. Governing codes.
 - d. In the absence of requirements, comply with requirements of ASHRAE handbooks.
 - 4. Extend drain piping from units with drain connections to drain receptors as indicated on Drawings. If not indicated on Drawings, terminate drain connection at nearest accessible location that is not exposed to view by occupants.
 - 5. Provide each 90-degree change in direction with a Y- or T-fitting. Install a threaded plug connection in the dormant side of fitting or future use as a service cleanout.
- B. Gravity Drains:

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1. Slope piping from unit connection toward drain termination at a constant slope of not less than one percent.

C. Pumped Drains:

1. If unit condensate pump or lift mechanism is not included with an integral check valve, install a full-size check valve in each branch pipe near unit connection to prevent backflow into unit.

3.7 INSTALLATION OF REFRIGERANT PIPING

A. Refrigerant Tubing Kits:

1. Unroll and straighten tubing to suit installation. Deviations in straightness of exposed tubing shall be unnoticeable to observer.
2. Support tubing using hangers and supports indicated at intervals not to exceed 5 feet (1.5 m). Minimum rod size, 1/4 inch (6.4 mm).
3. Prepare tubing ends and make mating connections to provide a pressure tight and leak-free installation.

B. Install refrigerant piping according to ASHRAE 15 and governing codes.

C. Select system components with pressure rating equal to or greater than system operating pressure.

D. Install piping as short and direct as possible, with a minimum number of joints and fittings.

E. Arrange piping to allow inspection and service of equipment. Install valves and specialties in accessible locations to allow for service and inspection. Install access doors or panels as specified in Section 083113 "Access Doors and Frames" if valves or equipment requiring maintenance is concealed behind finished surfaces.

F. Install refrigerant piping and tubing in protective conduit where installed belowground.

G. Install refrigerant piping and tubing in rigid or flexible conduit in locations where exposed to mechanical damage.

H. Unless otherwise required by VRF HVAC system manufacturer, slope refrigerant piping and tubing as follows:

1. Install horizontal hot-gas discharge piping and tubing with a uniform slope downward away from compressor.
2. Install horizontal suction lines with a uniform slope downward to compressor.
3. Install traps to entrain oil in vertical runs.
4. Liquid lines may be installed level.

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- I. When brazing, remove or protect components that could be damaged by heat.
- J. Before installation, clean piping, tubing, and fittings to cleanliness level required by VRF HVAC system manufacturer.
- K. Joint Construction:
 - 1. Ream ends of tubes and remove burrs.
 - 2. Remove scale, slag, dirt, and debris from inside and outside of tube and fittings before assembly.
 - 3. Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter.
 - a. Use Type BCuP (copper-phosphorus) alloy for joining copper fittings with copper tubing.
 - b. Use Type BAg (cadmium-free silver) alloy for joining copper with bronze.

3.8 INSTALLATION OF DUCT, ACCESSORIES, AND AIR OUTLETS

- A. Where installing ductwork adjacent to equipment, allow space for service and maintenance.
- B. Comply with requirements for metal ducts specified in Section 233113 "Metal Ducts."

3.9 IDENTIFICATION

- A. Identify system equipment, piping, tubing, and valves. Comply with requirements for identification specified in Section 230553 "Identification for HVAC Piping and Equipment."
- B. Identify system electrical components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
 - 1. Identify each control cable on each end and at each terminal with a numbered identification tag. Each cable shall have a unique tag.

3.10 STARTUP SERVICE

- A. Engage a VRF HVAC system manufacturer's service representative to perform system(s) startup service.
 - 1. Service representative shall be a factory-trained and -authorized service representative of VRF HVAC system manufacturer.
 - 2. Complete startup service of each separate system.
 - 3. Complete system startup service according to manufacturer's written instructions.

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- B. Startup checks shall include, but not be limited to, the following:
 - 1. Check control communications of equipment and each operating component in system(s).
 - 2. Check each indoor unit's response to demand for cooling and heating.
 - 3. Check each indoor unit's response to changes in airflow settings.
 - 4. Check each indoor unit and outdoor unit for proper condensate removal.
 - 5. Check sound levels of each indoor and outdoor unit.
- C. Installer shall accompany manufacturer's service representative during startup service and provide manufacturer's service representative with requested documentation and technical support during startup service.
 - 1. Installer shall correct deficiencies found during startup service for reverification.
- D. System Operation Report:
 - 1. After completion of startup service, manufacturer shall issue a report for each separate system.
 - 2. Report shall include complete documentation describing each startup check, the result, and any corrective action required.
 - 3. Manufacturer shall electronically record not less than two hours of continuous operation of each system and submit with report for historical reference.
 - a. All available system operating parameters shall be included in the information submitted.
- E. Witness:
 - 1. Invite Owner to witness startup service procedures.
 - 2. Provide written notice not less than 10 business days before start of startup service.

3.11 ADJUSTING

- A. Adjust equipment and components to function smoothly. Lubricate as recommended by manufacturer.
- B. Adjust initial temperature and humidity set points. Adjust initial airflow settings and discharge airflow patterns.
- C. Set field-adjustable switches and circuit-breaker trip ranges according to VRF HVAC system manufacturer's written instructions, and as indicated.
- D. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied condi-

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tions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

3.12 PROTECTION

- A. Protect products from moisture and water damage. Remove and replace products that are wet, moisture damaged, or mold damaged.
- B. Protect equipment from physical damage. Replace equipment with physical damage that cannot be repaired to new condition. Observable surface imperfections shall be grounds for removal and replacement.
- C. Protect equipment from electrical damage. Replace equipment suffering electrical damage.
- D. Cover and seal openings of equipment to keep inside of equipment clean. Do not remove covers until finish work is complete.

END OF SECTION 238129

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SECTION 26 32 13 - ENGINE GENERATORS

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 packaged engine-generator sets for standby power supply with the following features:

1. Bi-fuel engine sets (Diesel and Natural Gas)
 - a. The generator shall be able to operate on 100% diesel or a blend of diesel and natural gas. The generator shall initially start and run using diesel fuel. As conditions warrant, natural gas will automatically be introduced into the engine's air intake system for operation in bi-fuel mode. In bi-fuel mode, the generator, operating at typical load and ambient conditions, shall extend the on-site fuel's run-time by a factor of four.
2. Unit-mounted cooling system.
3. Unit-mounted and/or Remote-mounting control and monitoring.
4. Performance requirements for sensitive loads.
5. Load banks.
6. Outdoor enclosure with 186 mph wind rating
7. Generator parallel operation with integrated paralleling gear.

- B. Related Sections include the following:

1. Division 26 Section "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine-generator sets.

1.3 DEFINITIONS

- A. 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.

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1.4 SUBMITTALS

- A. Product Data: For each type of packaged engine generator indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. In addition, include the following:
 - 1. Thermal damage curve for generator.
 - 2. Time-current characteristic curves for generator protective device.

- 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. Dimensioned outline plan and elevation drawings of engine-generator set and other components specified.
 - 2. Design Calculations: Signed and sealed by a qualified professional engineer. Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
 - 3. Vibration Isolation Base Details: Signed and sealed by a qualified professional engineer. Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include base weights.
 - 4. Wiring Diagrams: Power, signal, and control wiring.
 - 5. Control Specification Sheets
 - 6. Warranty Statement

- C. Qualification Data: For manufacturer and testing agency.

- D. Source quality-control test reports.
 - 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. Certified Summary of Performance Tests: Certify compliance with specified requirement to meet performance criteria for sensitive loads.
 - 4. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
 - 5. Report of sound generation.
 - 6. Report of exhaust emissions showing compliance with applicable regulations.
 - 7. Certified Torsional Vibration Compatibility: Comply with NFPA 110.

- E. Field quality-control test reports.

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- F. Operation and Maintenance Data: For packaged engine generators to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01, include the following:
 - 1. 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.
- G. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
 - 1. Maintenance Proximity: Not more than four hours' normal travel time from Installer's place of business to Project site.
 - 2. Engineering Responsibility: Preparation of data for vibration isolators and seismic restraints of engine skid mounts, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Manufacturer Qualifications: A qualified manufacturer. Maintain, within 200 miles (321 km) of Project site, a service center capable of providing training, parts, and emergency maintenance repairs.
- C. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL), and that is acceptable to authorities having jurisdiction.
 - 1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
- D. Source Limitations: Obtain packaged generator sets and auxiliary components through one source from a single manufacturer.
- E. 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.

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- F. Comply with ASME B15.1.
- G. Comply with NFPA 37.
- H. Comply with NFPA 70.
- I. Comply with NFPA 110 requirements for Level 1 emergency power supply system.
- J. Comply with UL 2200.
- K. Engine Exhaust Emissions: Comply with applicable state and local government requirements.
- L. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at adjacent property boundaries due to sound emitted by generator set including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.
- M. The generator set must meet EPA federal emission guidelines for stationary standby power generation in both diesel and bi-fuel modes of operation. Generators that are not EPA certified for bi-fuel operation are not acceptable.

1.6 PROJECT CONDITIONS

- A. 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 50 deg C.
 - 2. Relative Humidity: 0 to 95 percent.
 - 3. Altitude: Sea level to 1000 feet (300 m).

1.7 COORDINATION

- A. Coordinate size and location of concrete bases for package engine generators. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

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1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which 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: Two years from date of Substantial Completion.

1.9 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include quarterly 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. Provide parts and supplies same as those used in the manufacture and installation of original equipment.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide products by one of the following:
1. Generac Industrial Power
 2. Caterpillar; Engine Div.

2.2 ENGINE-GENERATOR SET

- A. Factory-assembled and -tested, engine-generator sets.
- B. Mounting Frame: Maintain alignment of mounted components without depending on concrete foundation; and have lifting attachments.
1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and generator-set center of gravity.
- C. Capacities and Characteristics:

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1. Power Output Ratings: Nominal ratings as indicated, with capacity as required to operate as a unit as evidenced by records of prototype testing.
2. Output Connections: Three-phase, four wire.
3. Nameplates: For each major system component to identify manufacturer's name and address, model and serial number.

D. Generator-Set 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 3-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: Comply with NFPA 110, Type 10, system requirements.

2.3 ENGINE

- A. Fuel:
 1. Fuel oil, Grade DF-2.
- B. Rated Engine Speed: 1800 rpm.
- C. Maximum Piston Speed for Four-Cycle Engines: 2250 fpm (11.4 m/s).

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- D. Lubrication System: The following items are mounted on engine or skid:
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.
- E. Engine Fuel System:
1. Bi-fuel Generator System
 - a. The prime mover shall be a liquid cooled, diesel fueled (bi-fuel configured), turbocharged after-cooled engine of 4-cycle design. It will have adequate horsepower to achieve rated kW output with at an operating speed of 1800 RPM.
 - b. The engine shall support a 100% load step.
 - c. The system shall be sized and sequenced to allow emergency system loads as defined by NEC 700 to be transferred onto the generator(s) within 10 seconds. Non-emergency system loads will be sequenced onto the generator(s) as generator capacity comes on-line.
- F. Coolant Jacket Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level 1 equipment for heater capacity.
- G. Governor: Adjustable isochronous, with speed sensing.
- H. 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.

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5. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, ultraviolet-, and abrasion-resistant fabric.
 - a. Rating: 50-psig (345-kPa) maximum working pressure with coolant at 180 deg F (82 deg C), and noncollapsible under vacuum.
 - b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.

- I. Muffler/Silencer: Critical type, and flexible connector, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.
 1. Minimum sound attenuation of 25 dB at 500 Hz.
 2. Sound level measured at a distance of 10 feet (3 m) from exhaust discharge after installation is complete shall be 85 dBA or less.

- J. Air-Intake Filter: Heavy-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.

- K. Starting System: 24V electric, with negative ground.
 1. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in Part 1 "Project Conditions" Article.
 2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
 3. Cranking Cycle: 60 seconds.
 4. Battery: Adequate capacity within ambient temperature range specified in Part 1 "Project Conditions" Article to provide specified cranking cycle at least three times without recharging.
 5. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. 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 10 deg C regardless of external ambient temperature within range specified in Part 1 "Project Conditions" Article. Include accessories required to support and fasten batteries in place.
 7. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.

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8. Battery Charger: Current-limiting, automatic-equalizing and float-charging type. 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 deg C to plus 60 deg C 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.

2.4 FUEL OIL STORAGE

- A. Comply with NFPA 30.
- B. Base-Mounted Fuel Oil Tank: Factory installed and piped, complying with UL 142 fuel oil tank. Features include the following:
 1. Tank level indicator.
 2. Capacity: 72hrs at 100% rated output.
 3. Vandal-resistant fill cap.
 4. Containment Provisions: Double Wall tank with leak detection alarm. Comply with requirements of authorities having jurisdiction.
 5. Compliant with FL DEP Storage Tank Requirements

2.5 CONTROL AND MONITORING

2.6 CONTROLS – GENERATOR SET MOUNTED

- A. The generator control system shall be a fully integrated microprocessor based control system for standby emergency engine generators meeting all requirements of NFPA 110 level 1.

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- B. The generator control system shall be a fully integrated control system enabling remote diagnostics and easy building management integration of all generator functions. The generator controller shall provide integrated and digital control over all generator functions including: engine protection, alternator protection, speed governing, voltage regulation, synchronizing, load-sharing (real and reactive) and all related generator operations. The generator controller must also provide seamless digital integration with the engine’s electronic engine control module (ECM) if so equipped. Generator controllers that utilize separate voltage regulators and speed governors or do not provide seamless integration with the engine management system are considered less desirable.
- C. Communications shall be supported with building automation via the Modbus protocol without network cards. Optional internet and intranet connectivity shall be available.
- D. The control system shall provide an environmentally sealed design including encapsulated circuit boards and sealed automotive style plugs for all sensors and circuit board connections. The use of non-encapsulated boards, edge cards, and pc ribbon cable connections are considered unacceptable.
- E. Circuit boards shall utilize surface mount technology to provide vibration durability. Circuit boards that utilize large capacitors or heat sinks must utilize encapsulation methods to securely support these components.
- F. A predictive maintenance algorithm that alarms when maintenance is required. The controller shall have the capability to call out to the local servicing dealer when maintenance is required.
- G. Diagnostic capabilities should include time-stamped event and alarm logs, ability to capture operational parameters during events, simultaneous monitoring of all input or output parameters, callout capabilities, support for multi-channel digital strip chart functionality and .2 msec data logging capabilities.
- H. In addition to standard NFPA 110 alarms, the application loads should also be protected through instantaneous and steady state protective settings on system voltage, frequency, and power levels.
- I. Customer I/O shall be software configurable providing full access to all alarms, event data logging, and shutdown functionality. In addition, custom ladder logic functionality inside the generator controller shall be supported to provide application support flexibility. The ladder logic function shall have access to all the controller inputs and customer assignable outputs.

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- J. The control panel shall include a touch screen to display all user pertinent unit parameters including: engine and alternator operating conditions; oil pressure and optional oil temperature; coolant temperature and level alarm; fuel level (where applicable); engine speed; DC battery voltage; run time hours; generator voltages, amps, frequency, kilowatts, and power factor; alarm status and current alarm(s) condition per NFPA 110 level 1.
- K. Environmental
1. The generator set control shall be tested and certified to the following environmental conditions:
 - a. -40°C to +70°C Operating Range
 - b. 100% condensing humidity, 30°C to 60°C
 - c. IP22 protection for rear of controller; IP55 when installed in control panel
 - d. 5% salt spray, 48 hours, +38°C, 36.8V system voltage
 - e. Sinusoidal vibration 6G's RMS, 24-1000Hz
 - f. Electromagnetic Capability (89/336/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, BS EN 50081-2, 50082-2)
 - g. Shock: withstand 15G
- L. Functional Requirements
1. The following functionality shall be integral to the control panel.
 - a. The control shall include a minimum 5.5 inch, 480 x 320 pixel, white backlit graphical display with text based alarm/event descriptions.
 - b. The control shall include a minimum of 6-line data display
 - c. Generator set overview screen displaying critical generator set mechanical and electrical data on a single screen.
 - d. Audible horn for alarm and shutdown with horn silence switch
 - e. Standard ISO labeling
 - f. Multiple language capability
 - g. Remote start/stop control
 - h. Local run/off/auto control integral to system microprocessor
 - i. Cooldown timer
 - j. Speed adjust
 - k. Lamp test
 - l. Emergency stop push button
 - m. Voltage adjust
 - n. Voltage regulator V/Hz slope - adjustable

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- o. Password protected system programming

M. Digital Monitoring Capability

1. The controls shall provide the following digital readouts for the engine and generator. All readings shall be indicated in either metric or English units
2. Engine
 - a. Engine oil pressure
 - b. Engine oil temperature
 - c. Engine coolant temperature
 - d. Engine RPM
 - e. Battery volts
 - f. Engine hours
 - g. Engine crank attempt counter
 - h. Engine successful start counter
 - i. Service maintenance interval
 - j. Real time clock
 - k. Engine exhaust stack temperature
 - l. Engine main bearing temperature
3. Generator
 - a. Generator AC volts (Line to Line, Line to Neutral and Average)
 - b. Generator AC current (Avg and Per Phase)
 - c. Generator AC Frequency
 - d. Generator kW (Total and Per Phase)
 - e. Generator kVA (Total and Per Phase)
 - f. Generator kVAR (Total and Per Phase)
 - g. Power Factor (Avg and Per Phase)
 - h. Total kW-hr
 - i. Total kVAR-hr
 - j. % kW
 - k. % kVA
 - l. % kVAR
 - m. Generator bearing temperature
 - n. Generator stator winding temperature

N. Alarms and Shutdowns

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1. The control shall monitor and provide alarm indication and subsequent shutdown for the following conditions. All alarms and shutdowns are accompanied by a time, date, and engine hour stamp that are stored by the control panel for first and last occurrence:
2. Engine Alarm/Shutdown
 - a. Low oil pressure alarm/shutdown
 - b. High coolant temperature alarm/shutdown
 - c. Loss of coolant shutdown
 - d. Overspeed shutdown
 - e. Overcrank shutdown
 - f. Emergency stop shutdown
 - g. Low coolant temperature alarm
 - h. Low battery voltage alarm
 - i. High battery voltage alarm
 - j. Control switch not in auto position alarm
 - k. Battery charger failure alarm
 - l. ATS remote start wiring failure
3. Generator Alarm/Shutdown
 - a. Generator phase sequence
 - b. Generator over voltage
 - c. Generator under voltage
 - d. Generator over frequency
 - e. Generator under frequency
 - f. Generator reverse power (real and reactive)
 - g. Generator overcurrent ((including inverse definite minimum time. for Normally Inverse, Very Inverse, Extremely Inverse conditions as well as those based on Thermal Damage Curve configurations)
 - h. Generator current balance
4. Voltage Regulator Alarm/Shutdown
 - a. Loss of excitation alarm/shutdown
 - b. Instantaneous over excitation alarm/shutdown
 - c. Time over excitation alarm/shutdown
 - d. Rotating diode failure
 - e. Loss of sensing
 - f. Loss of PMG

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O. Inputs and Outputs

1. Programmable Digital Inputs

- a. The controller shall include the ability to accept programmable digital input signals. The signals may be programmed for either high or low activation using programmable Normally Open or Normally Closed contacts.

2. Programmable Discrete Outputs

- a. The control shall include the ability to operate seventeen (17) discrete outputs, integral to the controller, which are capable of sourcing up to 200mA.

3. Integrated PLC Functionality

- a. The panel shall allow the operator to create custom logic functions to provide additional user defined control of the generator set operation.

P. 2.4.6 Maintenance

1. All engine, voltage regulator, control panel and accessory units shall be accessible through a single electronic service tool. The following maintenance functionality shall be integral to the generator set control

- a. Engine running hours display
- b. Service maintenance interval (running hours or calendar days)
- c. Engine crank attempt counter
- d. Engine successful starts counter
- e. 40 events are stored in control panel memory
- f. Chronological status event log capable of displaying a sequence of event leading up to a generator set shutdown
- g. Programmable cycle timer that starts and runs the generator for a predetermined time. The timer shall use 7 user-programmable sequences that are repeated in a 7-day cycle. Each sequence shall have the following programmable set points:
 - 1) Day of week
 - 2) Time of day to start
 - 3) Duration of cycle

Q. Remote Communications

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1. Remote Communications

- a. The control shall include Modbus TCP communications via Ethernet 10BASE-T and Modbus RTU communications via RS-485 half duplex with configurable baud rates from 2.4k to 57.6k.

2. Remote Monitoring Software

- a. The control shall provide Monitoring Software with the following functionality
 - 1) Monitor up to eight (8) generator sets, plus ATS and UPS.
 - 2) Provide access to all date and events on generator set communications network
 - 3) Provide remote control capability for the generator set(s)
 - 4) Ability to communicate via Modbus TCP, Modbus RTU or remote modem

R. Annunciation

1. Local Annunciator (NFPA 99/110, CSA 282)

- a. Provide a local, control panel mounted, annunciator to meet the requirements of NFPA 110, Level 1.
- b. Annunciators shall be networked directly to the generator set control
- c. Local Annunciator shall include a lamp test pushbutton, alarm horn and alarm acknowledge pushbutton
- d. Provide the following individual light indications for protection and diagnostics:
 - 1) Overcrank
 - 2) Low coolant temperature
 - 3) High coolant temperature warning
 - 4) High coolant temperature shutdown
 - 5) Low oil pressure warning
 - 6) Low oil pressure shutdown
 - 7) Overspeed
 - 8) Low coolant level
 - 9) EPS supplying load
 - 10) Control switch not in auto
 - 11) High battery voltage
 - 12) Low battery voltage
 - 13) Battery charger AC failure
 - 14) Emergency stop

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- 15) Spare (or ATS Remote Start wiring failure)
- 16) Spare (or Tier 4 SCR when applicable)

2. Remote Annunciator (NFPA 99/110, CSA 282)

- a. Provide a remote annunciator to meet the requirements of NFPA 110, Level1.
- b. The annunciator shall incorporate ring-back capability so that after silencing the initial alarm, any subsequent alarms will sound the horn.
- c. Ability to be located up to 4000 ft from the generator set.
- d. The annunciator shall provide remote annunciation of all points listed below:

- 1) Overcrank
- 2) Low coolant temperature
- 3) High coolant temperature warning
- 4) High coolant temperature shutdown
- 5) Low oil pressure warning
- 6) Low oil pressure shutdown
- 7) Overspeed
- 8) Low coolant level
- 9) EPS supplying load
- 10) Control switch not in auto
- 11) High battery voltage
- 12) Low battery voltage
- 13) Battery charger AC failure
- 14) Emergency stop
- 15) Spare (or ATS Remote Start wiring failure)
- 16) Spare (or Tier 4 SCR when applicable)

S. Sequence of Operations

- 1. Description: This sequence describes a system utilizing CAT® EMCP4.4 generator controllers to parallel multiple generators to each other in an island or standby application.
- 2. Functional Sequence of Operation

- a. The EPS Automation shall be provided with the following Modes of Operation:

- 1) Automatic/Standby Mode
 - a) The automatic transfer switches are in the normal position serving utility power to the loads.
 - b) The generator set main breakers are open.

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- c) The automation is standing by to act in response to a run request from associated automatic transfer switches.
- 2) Emergency Mode
- a) Entry
 - i. Automatic Transfer Switch Run Request is received by all generator controllers
 - ii. Where applicable, load shed sequence is executed.
 - iii. All available generators are started.
 - iv. The first generator up to voltage and frequency is closed to the bus.
 - v. Critical loads and load shed priority 1 loads are powered.
 - vi. The remaining generator sets are synchronized and paralleled to the bus as they come up to voltage and frequency.
 - vii. As additional generators are paralleled to the emergency bus, Load Shed Priority levels are added, powering their associated loads.
 - viii. The system will continuously monitor real and reactive power and proportionally share load among all generators on the bus.
 - ix. The system is now in emergency mode.
 - b) Exit
 - i. Automatic transfer switches sense the utility source is within acceptable operational tolerances for a time duration set at the automatic transfer switch.
 - ii. As each automatic transfer switch transfers back to utility power, it removes it's run request from the generator plant.
 - iii. When the last automatic transfer switch has retransferred to the utility and all run requests have been removed from the generator plant, the tie breaker (if present) and all generator set main circuit breakers shall be opened.
 - iv. The generator sets are allowed to run for their programmed cool down period and shut down.
 - v. The system is returned to automatic/standby mode
- b. Load Sense Generator Demand

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- 1) The controller shall also include logic to automatically sequence the generator sets based on the total load requirement of the system. If the load exceeds a minimum reserve kW threshold, additional generator sets will automatically start, synchronize, and close the generator circuit breaker. If the site load falls below a reserve kW threshold, a generator set will automatically unload, open the generator circuit breaker, and shutdown.
- T. 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 generator set. When mode-selector switch is switched to the on position, generator set starts. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.
- U. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts generator set. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of a remote emergency-stop switch also shuts down generator set.
- V. Configuration: Operating and safety indications, protective devices, basic system controls, engine gages, instrument transformers, generator disconnect switch or circuit breaker, and other indicated components shall be grouped in a combination control and power panel. Control and monitoring section of panel shall be isolated from power sections by steel barriers. Panel features shall include the following:
1. Wall-Mounting Cabinet Construction: Rigid, self-supporting steel unit complying with NEMA ICS 6. Power bus shall be copper. Bus, bus supports, control wiring, and temperature rise shall comply with UL 891.
 2. Current and Potential Transformers: Instrument accuracy class.
- W. Indicating and Protective Devices and Controls: As required by NFPA 110 for Level 1 system, and the following:
1. AC voltmeter.
 2. AC ammeter.
 3. AC frequency meter.
 4. DC voltmeter (alternator battery charging).
 5. Engine-coolant temperature gage.

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6. Engine lubricating-oil pressure gage.
7. Running-time meter.
8. Ammeter-voltmeter, phase-selector switch(es).
9. Generator-voltage adjusting rheostat.
10. Fuel tank derangement alarm.
11. Fuel tank high-level shutdown of fuel supply alarm.
12. Generator overload.

X. Indicating and Protective Devices and Controls:

1. AC voltmeter.
2. AC ammeter.
3. AC frequency meter.
4. DC voltmeter (alternator battery charging).
5. Engine-coolant temperature gage.
6. Engine lubricating-oil pressure gage.
7. Running-time meter.
8. Ammeter-voltmeter, phase-selector switch(es).
9. Generator-voltage adjusting rheostat.
10. Start-stop switch.
11. Overspeed shutdown device.
12. Coolant high-temperature shutdown device.
13. Coolant low-level shutdown device.
14. Oil low-pressure shutdown device.
15. Fuel tank derangement alarm.
16. Fuel tank high-level shutdown of fuel supply alarm.
17. Generator overload.

Y. 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.

Z. Common Remote Audible Alarm: Comply with NFPA 110 requirements for Level 1 systems. Include necessary contacts and terminals in control and monitoring panel.

1. Overcrank shutdown.
2. Coolant low-temperature alarm.
3. Control switch not in auto position.
4. Battery-charger malfunction alarm.
5. Battery low-voltage alarm.

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AA. Common Remote Audible Alarm: Signal the occurrence of any events listed below without differentiating between event types. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset.

1. Engine high-temperature shutdown.
2. Lube-oil, low-pressure shutdown.
3. Overspeed shutdown.
4. Remote emergency-stop shutdown.
5. Engine high-temperature prealarm.
6. Lube-oil, low-pressure prealarm.
7. Fuel tank, low-fuel level.
8. Low coolant level.

BB. 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. Generator Circuit Breaker: Molded-case, electronic-trip type; 100 percent rated; complying with UL 489.

1. Tripping Characteristics: Adjustable long-time and short-time delay and instantaneous.
2. Trip Settings: Selected to coordinate with generator thermal damage curve.
3. Shunt Trip: Connected to trip breaker when generator set is shut down by other protective devices.
4. Mounting: Adjacent to or integrated with control and monitoring panel.

B. Ground-Fault Indication: Comply with NFPA 70, "Emergency System" signals for ground-fault. Integrate ground-fault alarm indication with other generator-set 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 or Class F.

D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required.

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- 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.
 - 1. Adjusting rheostat on control and monitoring panel shall provide plus or minus 5 percent adjustment of output-voltage operating band.
 - 2. The regulator shall include electronic build-up and overcurrent protection. It shall incorporate 1:1 volts per hertz characteristics with the regulated voltage a linear function proportional to frequency over a 30 to 70 hertz range.
- 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 GENERATOR-SET ENCLOSURE

- A. Description: Sound attenuated, vandal-resistant, weatherproof steel housing, wind resistant up to 186 mph . 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. Description: Prefabricated or pre-engineered walk-in enclosure with the following features:
 - 1. Construction: Galvanized-steel, metal-clad, integral structural-steel-framed building erected on concrete foundation.
 - 2. Structural Design and Anchorage: Comply with ASCE 7 for wind loads.
 - 3. Space Heater: Thermostatically controlled and sized to prevent condensation.
 - 4. Louvers: Equipped with bird screen and filter arranged to permit air circulation when engine is not running while excluding exterior dust, birds, and rodents.
 - 5. Hinged Doors: With padlocking provisions.
 - 6. Ventilation: Louvers equipped with bird screen and filter arranged to permit air circulation while excluding exterior dust, birds, and rodents.

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7. 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-set components.
 8. Muffler Location: Within enclosure.
 9. Sound Attenuation: The enclosure shall reduce source noise by a minimum of 25 dBA, measured at 10 feet from the enclosure.
- C. Engine Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for 2 hours with ambient temperature at top of range specified in system service conditions.
1. Louvers: Fixed-engine, cooling-air inlet and discharge. Storm-proof 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.
- D. Interior Lights with Switch: Factory-wired, vaporproof-type fixtures 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.
- E. Convenience Outlets: Factory wired, GFCI. Arrange for external electrical connection.

2.10 GENERATOR PARALLELING EQUIPMENT

- A. Scope
1. The Contractor shall furnish and install, where indicated on the drawings, a standby power generation control system.
 2. The Emergency Power System (EPS) consists of the following as applicable:
 - a. Generator sets equipped with a package-mounted Generator Set Controller (GSC) with synchronizing and paralleling controls operating package mounted, electrically operated, 5 cycle close/open circuit breakers.
 - b. System Master Automation (as specified herein)
 - c. Automatic Transfer Switches as indicated on drawings
- B. Construction

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1. Control Panels shall be front access only and NEMA 12 wall mounted enclosure with lockable front door.

C. Wiring/Terminations

1. Small wiring, necessary fuse blocks and terminal blocks within the paralleling control panel shall be furnished as required. Control components mounted within the assembly, such as fuse blocks, relays, pushbuttons, switches, etc., shall be suitably marked for identification corresponding to appropriate designations on manufacturer's wiring diagrams.
2. All control wire shall be type switchboard rated, neatly bundled or secured in a wireway.
3. A ground bus point shall be provided for instrument and signal grounding.

D. NameplateS

1. Engraved nameplates shall be mounted on the face of the assembly. Nameplates shall be laminated plastic, white characters on black background. Characters shall be 3/16-inch high, minimum.

E. Finish

1. All exterior and interior steel surfaces of the Master Control Panel shall be properly cleaned and provided with a rust-inhibiting coating.

F. Emergency Power System (EPS) automation Master Control Panel

1. Overall EPS operation shall include control of the generator sets including start/stop, synchronizing, dead-bus arbitration, generator kW load sharing, generator kVAR load sharing, generator loading/unloading, and load shed/add to affect the specified sequence of operations.
2. The EPS Controls shall include a Master Control Panel (MCP) designed to initiate the start and control between two (2) to eight (8) engine generator sets and provide coordinated system monitoring and control. Each generator set shall be connected to the MCP via a CAT 6 Ethernet cable.
3. The MCP shall consist of automation hardware and software required for the control and monitoring of the Engine-Generator Sets as shown on the Contract drawings. The System shall include all Processors, HMI (Human / Machine Interface) Touchscreens, Supervisory Network and all ancillary control equipment within the Master Control Panel necessary to automatically initiate the specified Functional Sequence of Operations. The HMI shall serve only as an Operator Interface. The EPS must continue to function normally with a complete HMI failure.

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4. The EPS Automation control power shall be protected against single point of failure by the utilization of a 24 VDC, Best Source DC system.
 - a. Each Engine battery shall be connected to a common DC bus, and furnished with a separate battery charger.
 - b. All controls shall be powered from this Best Source DC bus.
5. Each EPS Automation and Control component (nominal 24 VDC) shall be rated to continuously operate at 36 VDC (typical for open circuited 24 VDC chargers). To eliminate single points of failure, external overvoltage protection components are not acceptable.

G. EPS Automation & Controls Environmental specifications

1. The EPS Automation and Control System shall meet or exceed the following environmental requirements:
 - a. Control Power – 18 to 36 Vdc (24 Vdc nominal)
 - b. Operating Temperature – 0 to 50° C
 - c. Humidity – 10 to 90% non-condensing

Protective Relays

2. Generator and Utility protective relaying shall be provided as shown on the drawings as part of the overall EPS. Relays shall be installed within Electrical Switchgear or on-package generator panels as shown.

H. HMI – Human/Machine Interface

1. EPS Automation interface shall be via a touchscreen with the following characteristics:
 - a. Color, 15" (diagonal), graphical display.
 - b. Display shall have a minimum resolution of 800x600 pixels and provided with back light.
 - c. Operator and configuration screens shall be contained in non-volatile memory.
 - d. HMI shall utilize intuitive navigation through associated screens.

I. HMI Screen Listing

1. The EPS Automation shall provide the following screens. The screens shall provide all the information, metering, control, annunciations settings and indications listed below:

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- a. System Setup screen allowing setup for number of generators, scaling of metering, and system configurations.
- b. Main Menu Screen with a complete listing of major screens.
- c. System Overview Screen with a dynamic graphic display of the electrical one line.
- d. System Settings Screen.
- e. Generator Control Screen for each generator.
- f. Generator Metering Screen for each generator with graphical presentation of all functions specified. (See Metering, section 2.11)
- g. Generator Tuning Screen.
- h. Generator Load Shed/Add Control Screen.
- i. Generator Set Controller I/O screen displaying I/O status
- j. Communication Status Screen.
- k. Password Entry screen that shall contain a numeric keypad for password entry.
- l. Alarm Summary Screen that shall contain a time/date stamped System Alarm Summary.
- m. Load Sense/Demand Control and Status Screen.
- n. Plant Report Screen that provides a consolidated view of metering data all generators and Utility (if paralleled)

J. EPS HMI Metering

- 1. The following meters shall be provided for each individual generator:

- a. Voltmeter
- b. Ammeter
- c. Kilowatt meter
- d. Kilovar meter
- e. Frequency Meter
- f. Power Factor Meter
- g. Synchroscope
- h. Energy display for:
 - 1) kWh
 - 2) kVarH

K. Functional Sequences Of Operation

- 1. The EPS Automation shall be provided with the following Modes of Operation:
 - a. Automatic/Standby Mode

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- 1) The automatic transfer switches are in the normal position serving utility power to the loads.
- 2) The generator mains are open.
- 3) The automation is standing by to act in response to a run request from associated Automatic Transfer Switches.

b. Emergency Mode

- 1) Automatic Transfer Switch Run Request
 - a) Automatic transfer switches send the system a run request.
 - b) All available generators are started.
 - c) The first generator up to voltage and frequency is closed to the bus.
 - d) The remaining generators are synchronized and paralleled to the bus as they come up to voltage and frequency.
 - e) As each generator closes to the emergency bus, Load Shed levels are added, powering their associated loads.
 - f) The system is now in Emergency Mode.
- 2) Exit from Emergency Mode
 - a) Automatic transfer switches sense the utility source is within acceptable operational tolerances for a time duration set at the automatic transfer switch.
 - b) As each automatic transfer switch transfers back to utility power, it removes its run request from the generator plant.
 - c) When the last automatic transfer switch has retransferred to the utility and all run requests have been removed from the generator plant, all generator main circuit breakers shall open.
 - d) The generators are allowed to run for their programmed cool down period and shut down.
 - e) The system is now back in Automatic/Standby Mode.

L. Instant Auto Switch

1. There shall be a hardwired switch in the MCP that resets all critical switches back into the Automatic positions allowing an operator a quick means of reset. The following switches as a minimum shall be reset:
 - a. All generator control switches
 - b. All Gen Synch mode switches

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- c. Utility Synch Mode switch (UTILITY PARALLELING option only)
- d. The Master Mode switch.

M. Building Management System Interface

- 1. The system shall allow interface with the user's Building Management System.
- 2. The interface shall be designed such that the Building Management System or external user interface can in no way compromise the integrity or interfere with the critical operations of the EPS Control System.
- 3. Interface to the user's Building Management System shall be via MODBUS RS-422/485 or MODBUS/TCP Protocol.

2.11 FINISHES

- A. 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 set using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.
 - 1. Tests: Comply with NFPA 110, Level 1 Energy Converters and with IEEE 115.
- B. Project-Specific Equipment Tests: Before shipment, factory test engine-generator set 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. Full load run.
 - 3. Maximum power.
 - 4. Voltage regulation.
 - 5. Transient and steady-state governing.
 - 6. Single-step load pickup.
 - 7. Safety shutdown.
 - 8. Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's representative.
 - 9. Report factory test results within 10 days of completion of test.

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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 of 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 packaged engine-generator manufacturers' written installation and alignment instructions and with NFPA 110.
- B. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.
- C. Install packaged engine generator with restrained spring isolators having a minimum deflection on 4-inch- (100-mm-) high concrete base. Secure sets to anchor bolts installed in concrete bases.
- D. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.
- E. Provide initial fuel fill to perform generator tests and re-fill fuel tank, once testing is complete.

3.3 CONNECTIONS

- A. Piping installation requirements are specified in Division 23 Sections. Drawings indicate general arrangement of piping and specialties.
- B. Connect fuel piping to engines with a gate valve and union and flexible connector.
 - 1. Natural-gas piping, valves, and specialties for gas distribution are specified in Division 23 Section "Facility Natural-Gas Piping."
- C. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

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- D. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.4 IDENTIFICATION

- A. Identify system components according to Division 23 Section "Identification for HVAC Piping and Equipment" and Division 26 Section "Identification for Electrical Systems."

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.
- C. Perform tests and inspections and prepare test reports.
 - 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. Perform tests recommended by manufacturer and each electrical test and visual and mechanical inspection for "AC Generators and for Emergency Systems" specified in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 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.

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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 under 25 percent and at 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 generator-set installation, including engine exhaust and cooling-air intake and discharge, at four locations along the property line of the site, and compare measured levels with required values.
- E. Coordinate tests with tests for transfer switches and run them concurrently.
 - F. Test instruments shall have been calibrated within the last 12 months, traceable to standards of NIST, and adequate for making positive observation of test results. Make calibration records available for examination on request.
 - G. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 - H. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - I. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - J. Remove and replace malfunctioning units and retest as specified above.
 - K. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.
 - L. 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.

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3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators. Refer to Division 01 Section "Demonstration and Training."

END OF SECTION 26 32 13

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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. This Section includes transfer switches rated 600 V and less, including the following:
 - 1. Automatic transfer switches.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, weights, operating characteristics, furnished specialties, and accessories.
- B. Shop Drawings: Dimensioned plans, elevations, sections, and details showing minimum clearances, conductor entry provisions, gutter space, installed features and devices, and material lists for each switch specified.
 - 1. Single-Line Diagram: Show connections between transfer switch, power sources, and load; and show interlocking provisions for each combined transfer switch.
- C. Qualification Data: For manufacturer and testing agency.
- D. Field quality-control test reports.
- E. Operation and Maintenance Data: For each type of product to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01, include the following:
 - 1. Features and operating sequences, both automatic and manual.
 - 2. List of all factory settings of relays; provide relay-setting and calibration instructions, including software, where applicable.

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1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Maintain a service center capable of providing training, parts, and emergency maintenance repairs within a response period of less than eight hours from time of notification.
- B. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
 - 1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
 - 2. Source Limitations: Obtain automatic transfer switches through one source from a single manufacturer.
- C. 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.
- D. Comply with NEMA ICS 1.
- E. Comply with NFPA 70.
- F. Comply with NFPA 99.
- G. Comply with NFPA 110.
- H. Comply with UL 1008 unless requirements of these Specifications are stricter.

1.5 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 01.

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PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. 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:
 - 1. Contactor Transfer Switches:
 - a. Caterpillar; Engine Div.
 - b. ASCO Power Technologies, LP.
 - c. Kohler Power Systems; Generator Division.
 - d. Onan/Cummins Power Generation; Industrial Business Group.
 - e. Russelectric, Inc.

2.2 GENERAL TRANSFER-SWITCH PRODUCT REQUIREMENTS

- A. 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.
- B. Tested Fault-Current Closing and Withstand 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. Where transfer switch includes internal fault-current protection, rating of switch and trip unit combination shall exceed indicated fault-current value at installation location.
 - 2. Transfer switches shall have a three cycle closing and withstand rating of 65,000 RMS symmetrical amperes at 480 volts.
- C. Solid-State Controls: Repetitive accuracy of all settings shall be plus or minus 2 percent or better over an operating temperature range of minus 20 to plus 70 deg C.
- D. Resistance to Damage by Voltage Transients: Components shall meet or exceed voltage-surge withstand capability requirements when tested according to IEEE C62.41. Components shall meet or exceed voltage-impulse withstand test of NEMA ICS 1.
- E. Electrical Operation: Accomplish by a nonfused, momentarily energized solenoid or electric-motor-operated mechanism, mechanically and electrically interlocked in both directions.

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- F. 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 not acceptable.
 - 2. Switch Action: Double throw; mechanically held in both directions.
 - 3. Contacts: Silver composition or silver alloy for load-current switching. Conventional automatic transfer-switch units, rated 225 A and higher, shall have separate arcing contacts.

- G. Neutral Terminal: Solid and fully rated, unless otherwise indicated.

- H. Factory Wiring: Train and bundle factory wiring and label, consistent with Shop Drawings, either by color-code or by numbered or lettered wire and cable tape markers at terminations. Color-coding and wire and cable tape markers are specified in Division 26 Section "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.

- I. Enclosures: General-purpose NEMA 250, Type 1, complying with NEMA ICS 6 and UL 508, unless otherwise indicated.

2.3 AUTOMATIC TRANSFER SWITCHES

- A. Comply with Level 1 equipment according to NFPA 110.

- B. Switching Arrangement: Double-throw type, incapable of pauses or intermediate position stops during normal functioning, unless otherwise indicated.

- C. Manual Switch Operation: Under load, with door closed and with either or both sources energized. Transfer time is same as for electrical operation. Control circuit automatically disconnects from electrical operator during manual operation.

- D. Signal-Before-Transfer Contacts: A set of normally open/normally closed dry contacts operates in advance of retransfer to normal source. Interval is adjustable from 1 to 30 seconds.

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- E. In-Phase Monitor: Factory-wired, internal relay controls transfer so it occurs only when the two sources are synchronized in phase. Relay compares phase relationship and frequency difference between normal and emergency sources and initiates transfer when both sources are within 15 electrical degrees, and only if transfer can be completed within 60 electrical degrees. Transfer is initiated only if both sources are within 2 Hz of nominal frequency and 70 percent or more of nominal voltage.
- F. Automatic Transfer-Switch Features:
1. 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 is adjustable from 75 to 98 percent of pickup value. Factory set for pickup at 90 percent and dropout at 85 percent.
 2. Adjustable Time Delay: For override of normal-source voltage sensing to delay transfer and engine start signals. Adjustable from zero to six seconds, and factory set for one second.
 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 0 to 30 minutes, and factory set for 10 minutes to 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 LED Pilot Lights: Indicate source to which load is connected.
 7. Source-Available LED Indicating Lights: Supervise sources via transfer-switch normal- and emergency-source sensing circuits.
 - a. Normal Power Supervision: Green LED light with nameplate engraved "Normal Source Available."
 - b. Emergency Power Supervision: Red LED 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 automatic transfer switch will remain connected to emergency power source regardless of condition of normal source. LED 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.

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11. Auxiliary Contacts: Position of transfer switch (normal/emergency), Position of Maintenance bypass switch, Advanced transfer.
12. Engine Shutdown Contacts: 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.
13. 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 are adjustable from 10 to 30 minutes. Factory settings are 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 not available.

2.4 SOURCE QUALITY CONTROL

- A. Factory test and inspect components, assembled switches, and associated equipment. Ensure proper operation. Check transfer time and voltage, frequency, and time-delay settings for compliance with specified requirements. Perform dielectric strength test complying with NEMA ICS 1.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Floor-Mounting Switch: Anchor to floor by bolting.
 1. Concrete Bases: 4 inches (100 mm) high, reinforced, with chamfered edges. Extend base no more than 4 inches (100 mm) in all directions beyond the maximum dimensions of switch, unless otherwise indicated or unless required for seismic support. Construct concrete bases according to Division 26 Section "Hangers and Supports for Electrical Systems."
- B. Annunciator and Control Panel Mounting: Flush in wall, unless otherwise indicated.
- C. Identify components according to Division 26 Section "Identification for Electrical Systems."
- D. Set field-adjustable intervals and delays, relays, and engine exerciser clock.

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3.2 CONNECTIONS

- A. Wiring to Remote Components: Match type and number of cables and conductors to control and communication requirements of transfer switches as recommended by manufacturer. Increase raceway sizes, if necessary, at no additional cost to Owner, to accommodate required wiring.
- B. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- C. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing and inspecting agency to perform tests and inspections and prepare test reports.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.
- C. Perform tests and inspections and prepare test reports.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installation, including connections, and to assist in testing.
 - 2. After installing equipment and after electrical circuitry has been energized, test for compliance with requirements.
 - 3. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 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.

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5. After energizing circuits, 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 of 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. 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.
6. Ground-Fault Tests: Coordinate with testing of ground-fault protective devices for power delivery from both sources.
 - a. Verify grounding connections and locations and ratings of sensors.
- D. Coordinate tests with tests of generator and run them concurrently.
- E. 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.
- F. Remove and replace malfunctioning units and retest as specified above.
- G. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each switch. Remove all access panels so joints and connections are accessible to portable scanner.
 1. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each switch 11 months after date of Substantial Completion.
 2. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
 3. Record of Infrared Scanning: Prepare a certified report that identifies switches checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

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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 as specified below. Refer to Division 01 Section "Demonstration and Training."
- B. Coordinate this training with that for generator equipment.

END OF SECTION 26 36 00

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SECTION 27 00 00 - GENERAL COMMUNICATIONS PROVISIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Project Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
1. Scope of Work.
 2. Intent of Drawings.
 3. Pre-Bid Site Visit.
 4. Definitions.
 5. General Standards of Materials.
 6. Products and Substitutions.
 7. Applicable Codes.
 8. Guarantees and Certificates.
 9. Quiet Operation and Vibration Control.
 10. Temporary Shutdown of Existing Systems.
 11. Coordination.
 12. Shop Drawings, Product Data, and Samples.
 13. Owner Instruction.

1.3 SCOPE OF WORK

- A. The scope of the work included under Division 27 of the specifications shall include complete systems as shown in the Contract Documents and specified herein. Any work reasonably inferable or required to result in a complete installation or the intended operation and performance of the systems, shall be included in the Base Bid except where there is specific reference to exclusion and incorporation in other quotations.
- B. A brief written Scope of Work appears in Division 01.
- C. Contractor shall be solely responsible for all parts, labor, testing, documentation and all other processes and physical apparatus necessary to turn over the completed cabling system and associated infrastructure fully warranted and operational for acceptance by the Owner.
- D. Provide the telecommunication system conduit (with pull string), boxes, cable tray, and raceways in complete accordance with the specifications and the information found on the drawings.

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- E. This section specifies work to be provided by the network communications contractor, to include furnishing and installation of cabling, jacks, terminal blocks and terminations. Installation of communications cabling and performing any terminations in the MDF or IDF closets and at all room voice and data jacks will be the responsibility of this cabling contractor.
- F. This specification includes structured cabling design considerations, product specifications and installation guidelines for low-voltage network systems and associated infrastructure including, but not limited to:
 - 1. Horizontal Copper
 - 2. Intra-building Backbone Cabling
 - 3. Inter-building Backbone Cabling
 - 4. Telecommunications Pathways
 - 5. Communications Racks and Cable Managers
 - 6. Communications Grounding Systems
 - 7. Cabling Labeling and Administration
 - 8. Audiovisual Systems Infrastructure
 - 9. Security Systems Infrastructure

1.4 QUALITY ASSURANCE

- A. Contractor Resume: a resume of qualifications shall be submitted with the Contractor's proposal indicating the following:
 - 1. A list of 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 installed integrity of copper and fiber optic cable systems on this project.
 - 3. A technical resume of experience for the contractor's Project Manager and on-site installation supervisor who will be assigned to this project.
 - 4. A list of technical product training attended by the contractor's personnel that will install the system shall be submitted with the response.
 - 5. Any sub-Contractor, who will assist the primary contractor in performance of this work, shall have the same training and certification as the prime contractor.
- B. Prior to beginning any cable installation or terminations, the network communications contractor will meet with the Owner, IT department, Electrical Contractor and the Prime General Contractor to discuss all procedures and requirements and to review the condition of the conduit and raceway installations, plus layout of all new closets both (MDF's and IDF's).

1.5 INTENT OF DRAWINGS

- A. Provide complete and functional systems for the project. The systems shall conform to the details stated in the specifications and shown on the drawings. Items or work not

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shown or specified, but required for complete systems, shall be provided and conform with accepted trade practices. The drawings and specifications are presented to define specific system requirements and serve to expand on the primary contract requirements of providing complete systems. The drawings are diagrammatic and indicate the general arrangement and routing of the systems included in this Contractor's work.

- B. Do not scale the drawings. Because of the scale of the drawings, it is not possible to indicate offsets, fittings, or similar items which may be required to provide complete operating systems. Carefully investigate conditions affecting the work associated with this project. Install systems in such a manner that interferences between pipes, conduit, ducts, equipment, architectural and structural features are avoided. Provide items required to meet the project conditions without additional cost to the owner.
- C. These documents may not explicitly disclose final details required for a complete systems installation; however, contractors shall possess the expertise to include the necessary appointments of complete operating systems.
- D. Contractors shall be experienced in this type of construction and realize the extent of the work required.

1.6 PRE-BID SITE VISIT

- A. Bidders shall visit the site and become completely familiar with existing conditions prior to submitting their bid. No extra charges shall be allowed as a result of existing conditions.

1.7 DEFINITIONS

- A. Specific terminology, as used herein, shall have the following meanings:
 1. "Furnish"...Supply and deliver to project site, ready for unloading, unpacking, assembly, installation, and similar subsequent requirements.
 2. "Install"...Operations at project site, including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar requirements.
 3. "Provide"...Furnish and install, complete and ready for intended use.
 4. "Concealed, Interior"...Concealed from view and protected from physical contact by building occupants.
 5. "Concealed, Exterior" ...Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures.
 6. "Exposed, Interior"...Exposed to view indoors (not concealed).

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7. "Exposed, Exterior"...Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions.
8. "Finished Space" ...Space other than mechanical rooms, electrical rooms, furred spaces, pipe chases, unheated spaces immediately below roof, space above ceilings, unexcavated spaces, crawl spaces, tunnels, and interstitial spaces.
9. "Conditioned"...Spaces directly provided with heating and cooling.
10. "Unconditioned"...Spaces without heating or cooling including ceiling plenums.
11. "Indoors"...Located inside the exterior walls and roof of the building.
12. "Outdoors"...Located outside the exterior walls and roof of the building.

1.8 GENERAL STANDARDS OF MATERIALS

- A. Equipment and materials, unless otherwise noted, shall be new and of first quality, produced by manufacturers who have been regularly engaged in the manufacture of these products for a period of not less than five years.
- B. Equipment of one type shall be the products of one manufacturer; similar items of the same classification shall be identical, including equipment, assemblies, parts and components.
- C. Materials furnished shall be determined safe by a nationally recognized testing organization, such as Underwriters' Laboratories, Inc., or Factory Mutual Engineering Corporation, and materials shall be labeled, certified or listed by such organizations. Where third party certification is required for packaged equipment, the equipment shall bear the appropriate certification label.
- D. With respect to custom made equipment or related installations which are constructed specially for this project, the manufacturer shall certify the safety of same on the basis of test data. The Owner shall be furnished copies of such certificates.

1.9 PRODUCTS AND SUBSTITUTIONS

- A. Where a specific manufacturer's product is specified, the Contract Amount shall be based on that product only. Any substitutions from the specified product shall be offered as a Substitution Request. Refer to Division 01 for requirements. Substitutions shall not be permitted after the bidding phase without a Substitution Request Form included with the bid.
- B. Where several manufacturer's products are specified, the Contract Amount shall be based upon the specified products only. Any substitutions from the specified products shall be offered as a Substitution Request. Refer to Division 01 for requirements. Substitutions shall not be permitted after the bidding phase without a Substitution Request Form included with the bid.

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- C. It is the intent of these specifications that service organizations follow the above substitution procedures.

1.10 APPLICABLE REGULATORY REFERENCES AND CODES

- A. Materials furnished and work installed shall comply with applicable codes listed in Division 01, with the requirements of the local utility companies, and with the requirements of governmental departments or authorities having jurisdiction.
- B. Contractor is responsible for knowledge and application of current versions of all applicable standards and codes. In cases where listed standards and codes have been updated, Contractor shall adhere to the most recent revisions, including all relevant changes or addenda at the time of installation.
- C. TIA:
 1. TIA-526-7-A, Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant
 2. TIA-526-14-C, Optical Power Loss Measurement of Installed Multimode Fiber Cable Plant
 3. TIA-568.0-E, Generic Telecommunications Cabling for Customer Premises
 4. TIA-568.1-E, Commercial Building Telecommunications Cabling
 5. TIA-568.2-D, Balanced Twisted-Pair Telecommunications Cabling and Components
 6. TIA-568.3-D, Optical Fiber Cabling Components
 7. TIA-568.4-D, Broadband Coaxial Cabling and Components
 8. TIA-569-E, Telecommunications Pathways and Spaces
 9. TIA-606-C, Administration Standard for Telecommunications Infrastructure
 10. TIA-607-D, Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises
 11. TIA-758-B, Customer-Owned Outside Plant Telecommunications Cabling Standard
 12. TIA-862-B, Structured Cabling Infrastructure Standard for Intelligent Building Systems
 13. TIA-942-B, Telecommunications Infrastructure Standard for Data Centers
 14. ANSI/TIA-1152-A: Requirements for Field Test Instruments and Measurements for Balanced Twisted-Pair Cabling
 15. ANSI/TIA-1179-A, Healthcare Facility Telecommunications Infrastructure Standard
 16. TIA-TSB-162-A, Telecommunications Cabling Guidelines for Wireless Access Points
 17. TIA TSB-184-A Guidelines for Supporting Power Delivery over Balanced Twisted-Pair Cabling

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D. BICSI – Building Industry Consulting Service International:

1. BICSI 004-2012, Information Technology Division Systems Design and Implementation Best Practices for Healthcare Institutions and Facilities
2. BICSI Telecommunications Distribution Methods Manual (TDMM), 14th Edition
3. BICSI Telecommunications Project Management Manual (TPMM), 1st Edition
4. BICSI Information Technology Systems Installation Methods Manual (ITSIMM), 7th Edition
5. BICSI Outside Plant Design Reference Manual (OSPDRM), 6th Edition
6. ANSI/BICSI 002-2019, Data Center Design and Implementation Best Practices
7. ANSI/BICSI 004-2018, Information Communication Technology Systems Design and Implementation Best Practices for Healthcare Institutions and Facilities
8. ANSI/BICSI 005-2016, Electronic Safety and Security (ESS) System Design and Implementation Best Practices
9. ANSI/BICSI 006-2020, Distributed Antenna Systems (DAS) Implementation Best Practices
10. ANSI/BICSI 007-2020, Information Communication Technology Design and Implementation Practices for Intelligent Buildings and Premises
11. ANSI/BICSI 008-2018, Wireless Local Area Network (WLAN) Systems Design and Implementation Best Practices
12. ANSI/BICSI N2-17, Practices for the Installation of Telecommunications and ICT Cabling Intended to Support Remote Power Applications
13. ANSI/BICSI N3-20, Planning and Installation Methods for the Bonding and Grounding of Telecommunication and ICT Systems and Infrastructure

E. AVIXA:

1. Audio Coverage Uniformity in Listener Areas
2. Standard Guide for Audiovisual Systems Design and Coordination Processes
3. Image System Contrast Ratio
4. Audiovisual Systems Performance Verification
5. Videoconferencing Lighting
6. Rack Design for Audiovisual Systems

F. National Electric Codes – all applicable

G. OSHA Standards and Regulations – all applicable

H. Local Codes and Standards – all applicable

I. Anywhere cabling standards conflict with one another or with electrical or safety codes, Contractor shall defer to the NEC and any applicable local codes or ordinances, or default to the most stringent requirements listed by either.

J. Knowledge and execution of applicable standards and codes is the sole responsibility of the Contractor.

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- K. Any violations of applicable standards or codes committed by the Contractor shall be remedied at the Contractor's expense.

1.11 GUARANTEES AND CERTIFICATES

- A. Defective equipment, materials or workmanship, including damage to the work provided under other divisions of this contract resulting from same, shall be replaced or repaired at no extra cost to the Owner for the duration of the stipulated guarantee periods.

- 1. Unless specifically indicated otherwise, the duration of the guarantee period shall be one (1) year following the date of Substantial Completion. Temporary operation of the equipment for temporary conditioning, testing, etc., prior to occupancy will not be considered part of the warranty period.

- B. Telecom Cabling Plant

- 1. General

- a. Contractor shall provide a 25 year System Warranty on all copper and fiber permanent cabling links.
- b. It is understood the System Warranty is a system performance warranty guaranteeing for 25 years from acceptance that the installed system shall support all data link protocols for which that Category of copper cabling system or fiber OM/OS designation of fiber optic system is engineered to support according to current and future IEEE and TIA standards.
- c. Upon acceptance of Warranty, the Manufacturer will mail a notification letter to the installer and a notification letter and warranty certificate to the Owner.

- 2. Contractor Warranty Obligations

- a. Installation firm (Contractor) must be a current Manufacturer Certified Installer or approved equivalent manufacturer in good standing and shall include a copy of the company installation certification with the bid.
- b. Contractor shall name a supervisor to serve on site as a liaison responsible to inspect and assure all terminations are compliant to factory methods taught in Technician Certification Training, or approved equal, and according to all Standards cited in the Regulatory References section of this document.
- c. Contractor liaison (project supervisor) shall have a current, up-to-date Manufacturer certificate in both copper and fiber. Copies of the copper and fiber certificates shall be submitted with the bid.

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- d. All intra-building new fiber optic installations shall utilize an appropriate cable construction as specified herein.
- e. Contractor shall install all racking and support structures according to cited Standards in such fashion as to maintain both cited industry standards as well as manufacturer recommendations for uniform support, protection, and segregation of different cable types.
- f. Contractor is responsible for maintenance of maximum pulling tensions, minimum bend radius, distance limitations, and approved termination methods as well as adhering to industry accepted practices of good workmanship.
- g. Contractor is responsible for understanding and submitting to the Manufacturer all documents required at project end. These include, but are not limited to: completed warranty forms, passing test reports and drawings of floor plans showing locations of links tested. These requirements are the same for accepted equivalent manufacturers.
- h. Test results shall be delivered in the tester's native format (not Excel) and represent the full test report, summaries shall not be accepted. All test shall be uniform, testing Permanent Link. Contractor shall use Manufacturer (or approved equivalent manufacturer) approved testers, test leads and latest operating systems.
- i. The Contractor will correct any problems and malfunctions that are warranty-related issues without additional charge to the Owner for the entire warranty period.
- j. The warranty period shall commence following the final acceptance of the project by the Owner and written confirmation of Warranty from the Manufacturer. These requirements are the same for accepted equivalent manufacturers.

1.12 QUIET OPERATION AND VIBRATION CONTROL

- A. Equipment and associated items shall operate under conditions of load without sound or vibration deemed objectionable by the Architect. In the case of moving equipment, sound or vibration noticeable outside of the room in which it is installed, or noticeable within the room in which it is installed, shall be deemed objectionable. Sound or vibration deemed objectionable shall be corrected in an approved manner at no extra cost to the Owner. Vibration control shall be provided by means of approved vibration isolators and installed in accordance with the isolator manufacturer's recommendations.
- B. The sound pressure levels around mechanical and electrical equipment in equipment spaces shall not exceed 85 dBA at any point three (3) feet from the equipment, with all equipment in the room operating. The sound criteria applies to the complete range of each piece of equipment.

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1.13 TEMPORARY SHUTDOWN OF EXISTING SYSTEMS

- A. Plan installation of new work and connections to existing work to insure minimum interference with regular operation of existing systems. Some temporary shutdown of existing systems may be required to complete the work.
- B. Submit to the Owner in writing for approval, proposed date schedule, time, and duration of necessary temporary shutdowns of existing systems. Submit schedule at least fifteen (15) calendar days in advance of intended shutdown. Shutdowns shall be made at such times as shall not interfere with regular operation of existing facilities and only after written approval of Owner. The Owner reserves the right to cancel shutdowns at any time prior to the shutdowns. To insure continuous operation, make necessary temporary connections between new and existing work. Bear costs resulting from temporary shutdowns and temporary connections. No additional charges shall be allowed for Owner-canceled shutdowns that must be rescheduled.
- C. Shutdowns must be performed by the Owner or under Owner supervision. Do not shut-down any system. The Owner reserves the right to require a walk-through of any shutdown prior to the shutdown. Following electrical shutdowns, verify that affected motors are rotating in the proper direction. Bear costs associated with reverse rotated motors.

1.14 COORDINATION

- A. Coordinate and furnish in writing to the Architect information necessary to permit the work to be installed satisfactorily and with the least possible interference or delay.
- B. Coordination drawings shall be prepared as defined in Division 01. No installation of permanent systems shall proceed until the coordination drawings are reviewed by the Architect. No extra charges shall be allowed for changes required to accommodate installation of systems provided under other divisions of this contract.
- C. Coordination drawings shall be developed from individual system shop drawings and contractor fabrication drawings. Electronic or other reproduced engineering design drawings used as coordination drawings are not acceptable.
- D. When work is installed without proper coordination, changes to this work deemed necessary by the Architect shall be made to correct the conditions without extra cost to the Owner.

1.15 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

- A. Shop drawings, product data, and samples shall be submitted in accordance with the provisions of Division 01.

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B. The following shall be submitted by the Contractor for review:

1. Scale shop drawings showing system components with sizing indicated, including but not limited to:
 - a. equipment locations.
 - b. raceways
 - c. insert and sleeve locations
 - d. hangers, anchors and guides
 - e. expansion joints
 - f. access doors
2. Product data for system components and materials (including construction standards).
3. Samples of finishes and trim exposed to view, such as fixture trim, escutcheon plates and similar items.

1.16 RECORD DRAWING DOCUMENTATION

- A. Documentation - submit at the end of the project, as-built drawings of the raceway and cabling installation showing routing, sizes, terminal locations, cable numbers, etc.

1.17 OWNER INSTRUCTION

- A. After final tests and adjustments have been completed, furnish the services of qualified personnel to instruct representatives of the Owner in the operation and maintenance procedures for equipment and systems installed as part of this project. Operation and maintenance instructions for major items of equipment shall be directly supervised by the equipment manufacturer's representative. Supply qualified personnel to operate equipment for sufficient length of time as required to meet governing authorities' operation and performance tests and as required to assure that the Owner's representatives are properly qualified to take over operation and maintenance procedures. Minimum instruction period shall be 16 man hours. The instruction period shall be broken into segments at the discretion of the Owner.
 1. Notify the Architect, the Owner's representative and equipment manufacturers' representatives, by letter, as to the time and date of operating and maintenance instruction periods approved by the Owner at least one (1) week prior to conducting same.
 2. Forward to the Architect the signatures of all those present for the instruction periods.

PART 2 - PRODUCTS (Not Used)

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PART 3 - EXECUTION (Not Used)

END OF SECTION 27 00 00

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SECTION 27 05 29 - HANGERS AND SUPPORTS FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Project Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
1. Steel slotted support systems for communication raceways.
 2. Aluminum slotted support systems for communication raceways.
 3. Nonmetallic slotted support systems for communication raceways.
 4. Conduit and cable support devices.
 5. Support for conductors in vertical conduit.
 6. Structural steel for fabricated supports and restraints.
 7. Mounting, anchoring, and attachment components, including powder-actuated fasteners, mechanical expansion anchors, concrete inserts, clamps, through bolts, toggle bolts, and hanger rods.
 8. Fabricated metal equipment support assemblies.

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 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.

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2. Include rated capacities and furnished specialties and accessories.
- B. Shop Drawings: For fabrication and installation details for communications hangers and support systems.
1. Trapeze hangers. Include product data for components.
 2. Steel slotted-channel systems.
 3. Aluminum slotted-channel systems.
 4. Nonmetallic slotted-channel systems.
 5. Equipment supports.
- C. Delegated-Design Submittal: For hangers and supports for communications systems.
1. Include design calculations and details of trapeze hangers.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plan(s) 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. Suspended ceiling components.
 2. Ductwork, piping, fittings, and supports.
 3. Structural members to which hangers and supports will be attached.
 4. Size and location of initial access modules for acoustical tile.
 5. Items penetrating finished ceiling, including the following:
 - a. Luminaires.
 - b. Air outlets and inlets.
 - c. Speakers.
 - d. Sprinklers.
 - e. Access panels.
 - f. Projectors.
- B. Welding certificates.

1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M.
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
1. AWS D1.1/D1.1M.

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2. AWS D1.2/D1.2M.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design hanger and support system.
- B. 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 Rating: Class 1.
 2. Self-extinguishing according to ASTM D 635.

2.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum 13/32-inch- (10-mm-) diameter holes at a maximum of 8 inches (200 mm) o.c. 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: 1-5/8 inches
 4. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 5. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
 6. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
 7. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
 8. Channel Dimensions: Selected for applicable load criteria.
- B. Aluminum Slotted Support Systems: Extruded aluminum channels and angles with minimum 13/32-inch- diameter holes at a maximum of 8 inches o.c. in at least one surface.
 1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
 2. Channel Material: 6063-T6 aluminum alloy.
 3. Fittings and Accessories Material: 5052-H32 aluminum alloy.

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4. Channel Width: 1-5/8 inches.
 5. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
 6. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
 7. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
 8. Channel Dimensions: 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 inches o.c., in at least one surface.
1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
 2. Channel Width: 1-5/8 inches.
 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[, except metal items may be stainless steel.
 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 clamps, hangers, 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 communications conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be made of malleable iron.
- F. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M 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. Powder-Actuated Fasteners: Threaded-steel stud for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 2. 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.

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3. 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.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58 units are suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.3 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Section 055000 "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with the following standards for application and installation requirements of hangers and supports, except where requirements on Drawings or in this Section are stricter:
 1. NECA 1.
 2. NECA/BICSI 568.
 3. TIA-569-D.
 4. NECA 101
 5. NECA 102.
 6. NECA 105.
 7. NECA 111.
- B. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping materials and installation for penetrations through fire-rated walls, ceilings, and assemblies.
- C. Comply with requirements for pathways specified in Section 270528 "Pathways for Communications Systems."
- D. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMTs, IMCs, and RMCs as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

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- E. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other 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 SUPPORT INSTALLATION

- A. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC and RMC may be supported by openings through structure members, according to NFPA 70.
- 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.
- C. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten communications 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: Use approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - 4. To Existing Concrete: Use expansion anchor fasteners.
 - 5. Instead of expansion anchors, powder-actuated-driven threaded studs, provided with lock washers and nuts, may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
 - 6. To Steel: Beam clamps (MSS SP-58, Type 19, 21, 23, 25, or 27), complying with MSS SP-69.
 - 7. To Light Steel: Sheet metal screws.
 - 8. 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 by means that comply with seismic-restraint strength and anchorage requirements.

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- D. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Section 055000 "Metal Fabrications" for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor communications materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 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 minimum dry film thickness of 2.0 mils.
- B. Touchup: Comply with requirements in Division 09 Painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.
- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas, and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 27 05 29

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SECTION 27 41 00 – AUDIOVISUAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY OF WORK

- A. Provide fully operational and tested audiovisual systems ready for use by the Owner. Furnish and install audiovisual equipment, cabling, and supporting devices as required in the contract documents. Provide all software, programming, and provisioning of equipment and systems required for optimal operation of systems.
- B. Provide coordination with Building General Contractor, Building Electrical Contractor, and the Owner for installation of the audiovisual systems.
- C. Provide trim rings, flanges, or escutcheon rings as appropriate around all penetrations through finished construction. Provide escutcheon rings at finished ceiling penetrations created by equipment mounts and conduit stubs. The trim rings, flanges, or escutcheon rings color shall match the adjacent finishes or be approved by the Architect.
- D. All individual components required for a fully functioning system may not be shown on equipment lists and schematic diagrams. Provide all components needed for a fully functional audiovisual system. These include but are not limited to:
 - 1. Cabling
 - 2. Interfaces
 - 3. Splitters
 - 4. Terminations
 - 5. Wiring blocks
 - 6. Wiring harnesses
 - 7. Cable assemblies
 - 8. Adapters
 - 9. Connectors
 - 10. Infrared eyes

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11. Communications, sensor, and control modules
12. Extenders
13. Distribution amplifiers
14. Mounting hardware
15. Power supplies

1.3 SOFTWARE REQUIREMENTS

A. Uncompiled Source Code

1. The original uncompiled source code for the audiovisual system equipment shall be provided to the Owner in electronic form with the following stipulations:
 - a. The Contractor shall submit for review and approval with the Owner, a written agreement restricting the Owner's use and distribution of the uncompiled source code. The uncompiled source code shall be permitted to be used only by the Owner for future maintenance of and upgrades to the specific audiovisual systems within the scope of this project. The uncompiled source code developed by the Contractor shall not be used in any other Owner audiovisual systems outside the scope of this project. The electronic copy of the source code shall remain on the Owner's premises. Future third party maintenance providers retained by the Owner shall have access to the uncompiled source code on the designated Owner's workstation on Owner's premises.
 - b. Upon acceptance of the written agreement by the Owner and Contractor, the Contractor shall submit one (1) copy of the uncompiled source code in electronic form on CD with one license of the Manufacturer's programming software.

1.4 DEFINITIONS

A. The definitions specific to this section are provided below.

1. "Multimedia" in these specifications and contract documents also means the same as audiovisual or AV.
2. "Furnish" shall mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each sentence.
3. "Install" shall be used to describe operations at project site including unloading, packing, assembly, erection, placing, anchoring, applying, working to dimension,

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finishing, curing, protection, cleaning, and similar operations, as applicable in each instance.

4. "Provide" shall mean furnish and install, complete and ready for intended use, as applicable in each instance.
5. "Directed" shall mean as directed by Owner prior to installation of equipment.
6. "Indicated" shall mean "indicated on Contract Drawings".
7. "Shown" shall mean "shown on Contract Drawings".
8. "Section" shall mean on of the Specification Sections.
9. "Division" shall mean on of the Specification Divisions.
10. "Article" shall mean on of the numbered paragraphs of the Specification Section.
11. "Work" or "Audiovisual Work" herein includes products, labor, equipment, tools, appliances, transportation and related items, directly or indirectly required to complete the specified and/or indicated electrical installation.
12. "Code" shall mean any and all regulations and requirements of regulatory bodies, public or private, having jurisdiction over the work involved.
13. "Product" used in Division 16 means material, equipment, machinery, and/or appliances directly or indirectly required to complete the specified and/or indicated Electrical Work.
14. "Standard Product" shall mean a manufactured product, illustrated and/or described in catalogs or brochures, which are in general distribution prior to the date of issue of construction documents for bidding. Products shall generally be identified by means of a specific catalog number and manufacturer's name.
15. "Wiring" shall mean fitting, conduits, wires, junction boxes, connections to equipment, splices, and other accessories required to complete the work.
16. Abbreviations and Symbols: See lists for both on drawings.
17. "This AV Contractor" shall mean the AV Contractor responsible for project work.
18. Contract Documents: drawings, specifications, bid forms, addendum, and change orders.

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B. Reference to the following codes and standards shall mean:

<u>Reference</u>	<u>Definition</u>
NEC	National Electrical Code Current Edition
ASTM	American Society for Testing Materials
NEMA	National Electrical Manufacturers Association
ANSI	American National Standards Institute
FS	Federal Specification, US Government
CS	Commercial Standards issued by US Department of Commerce
NESC	National Electrical Safety Code
NETA	National Electrical Testing Association
ADA	Americans with Disabilities Act

1.5 QUALITY ASSURANCE

- A. Engage an experienced Installer who is a factory-authorized service representative of the specified and approved equipment to perform the work of this Section.
- B. All items of equipment including cabling shall be designed by the manufacturer to function as a complete system and shall be accompanied by the manufacturer’s complete service notes and drawings detailing all interconnections.
- C. The AV Contractor shall show satisfactory evidence, upon request, that he maintains a fully equipped service organization capable of furnishing adequate inspection and service to the system. The AV Contractor shall maintain at his facility the necessary spare parts in the proper portion as recommended by the manufacturer to maintain and service the equipment being supplied.
- D. Pay any and all expenses incurred by these equipment manufacturers' representatives.
- E. Electrical Component Standard
 - 1. Provide work complying with applicable requirements of NFPA 70 “National Electrical Code” including but not limited to:
 - a. Article 250. Grounding.

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- b. Article 300, Part A. Wiring method.
- c. Article 310. Conductors for General Wiring.
- d. Article 725. Remote Control, Signaling, Circuits.
- e. Article 800. Communication Systems.

1.6 PERFORMANCE OF EQUIPMENT

- A. Materials, equipment and appurtenances of any kind, shown on the drawings, hereinafter specified or required for the completion of the work in accordance with the intent of these specifications, shall be completely satisfactory and acceptable in operation, performance and capacity. No approval either written or verbal of any drawings, descriptive data or samples or such material, equipment and/or appurtenance shall relieve the AV Contractor of his responsibility to turn over the same to the Owner in perfect working order at the completion of the work.
- B. Any material, equipment or appurtenances, the operation, capacity or performance of which does not comply with the drawings and/or specification requirements or which is damaged prior to acceptance by the Owner shall be held to be defective material and shall be removed and replaced with proper and acceptable materials, equipment and/or appurtenances or put in proper and acceptable working order, satisfactory to the Architect and Owner, without additional cost to the Owner.

PART 2 - PRODUCTS

2.1 AUDIOVISUAL CABLING

- A. Shielded Twisted Pair
 - 1. Provide shielded twisted pair cabling where recommended by the manufacturer for connection of the equipment.
 - 2. Cabling shall be plenum rated

2.2 PANELS AND CONNECTORS

- A. Provide wall plates with connector configurations as shown on the drawings.
- B. Coordinate all wall plate connectors with corresponding cabling connectors for a complete system.

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- C. Provide blank faceplates over all unused audiovisual backboxes. Cover plate color and construction shall match faceplates used for other devices in the room or area.
- D. Where cabling extends out of backboxes directly through faceplates, provide split grommet faceplates. Faceplate shall be split to permit installation around existing cabling.

2.3 LABELING AND IDENTIFICATION

A. Cable labels

1. Cable labels shall be pressure sensitive labels with non-smearing printing.
2. The labels shall be long lasting adhesive type.
3. Shall meet the legibility, defacement, exposure, and adhesion requirements of UL 969.
4. Shall be preprinted or computer printed type. Handwritten labels are not acceptable.
5. Provide vinyl substrate with a white printing area and black print. If cable jacket is white, provide cable label with printing area that is any other color than white, preferably orange or yellow, so that the labels are easily distinguishable.
6. Shall be flexible vinyl or other substrates to apply easy and flex as cables are bent.
7. Shall use aggressive adhesives that stay attached to all cable insulation types.
8. Cabling labels shall be generated with laser printers.
9. Physical dimensions of cabling labels provided shall correspond to type of cable. Provide label sizes for various cables as needed.

B. Hardware and equipment identification labels

1. Shall meet the legibility, defacement, exposure, and adhesion requirements of UL 969.
2. Shall be preprinted or computer printed type. Handwritten labels are not acceptable.
3. Where insert type labels are used, provide clear plastic cover over label.

C. Grounding and bonding, pathway, and space labels

1. Shall meet the legibility, defacement, exposure, and adhesion requirements of UL 969.

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2. Shall be preprinted or computer printed type. Handwritten labels are not acceptable.

D. Panel labels

1. Shall meet the legibility, defacement, exposure, and adhesion requirements of UL 969.
2. Shall be preprinted or computer printed type. Handwritten labels are not acceptable.
3. Where insert type labels are used, provide clear plastic cover over label.

2.4 AV SYSTEM TYPE 1: DIVISIBLE TRAINING ROOM 117

A. Basis of Design Equipment List:

Line	System Component	Description	Basis of Design	Qty	Unit
1	System Displays				
2	Flat Panel Display	Flat panel commercial display, UHD resolution, nominal 65" diagonal.	NEC ME651-AVT3, or Samsung Commercial grade, LG Commercial grade	3.00	EA
3	System Sources/Inputs				
4	Conference Camera System	PTZ camera – located at each display	QSC PTZ-IP 12x72	3.00	EA
5	Rack PC located in IT closet 100.1 Rack, serving each room	Owner Furnished Contractor Installed Rack Mounted Mini PC	OFE Computer	2.00	EA
6	Wireless Presentation System in IT closet 100.1 Rack, serving each room	Wireless Presentation Receiver mounted in credenza	Crestron AirMedia Presentation System Series 3 200, AM-3200	2.00	EA

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Line	System Component	Description	Basis of Design	Qty	Unit
7	Infrastructure				
8	Flat Panel Mount	Flat Panel Swing Arm Wall Display Mount - 25" Extension with interface bracket	Legrand Chief Manufacturing TS525TU	3.00	EA
9	Flat Panel Backbox	In-wall Storage Box with 6 Receptacle Filter & Surge, white with flange, and AV Component Adapter Bracket	Chief PAC526FWP6 with PACUNV1	3.00	EA
10	Distribution and Switching				
11	Network video encoder mounted in IT closet 100.1 Rack	Network Video Endpoint mounted in rack	QSC Q-SYS NV-32-H/48vDC 2.0A power supply	2.00	EA
12	Flat Panel network video decoder located behind the displays	Network Video Endpoint	QSC Q-SYS NV-32-H/48vDC 2.0A power supply	3.00	EA
13	HDMI Extender Tx/RX from each room to IT closet 100.1 Rack PC	Extron HDMI Decorator Style Tx, HDMI 4K/60 Rx	Extron 60-1421-13/60-1631-53	2.00	EA
14	USB Extender from each room to IT closet 100.1 Rack PC	USB Extender Transmitter rack mounted/ Receiver Decorator-Style Version White	Extron USB Extender Plus T 60-1471-12/ Plus D R 60-1473-23	2.00	EA
15	AV Network Switch located in IT Closet 100.1	AV Network Switch	QSC NS26-1440++	1.00	EA

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Line	System Component	Description	Basis of Design	Qty	Unit
16	Control				
17	Wall mounted Control Touch Panel in each room. Program for divisible room combining and venue selection	7" Wall Mounted Control Touch Panel, Capacitive Touch Surface, 16M colors, PoE	QSC Q-SYS TSC-70-G3	2.00	EA
18	Audio				
19	Wall Network Audio Input/Output Interface in each room	Dante and AES67 Audio Interface with two balanced mic/line XLR inputs, two balanced XLR line outputs	Atterotech unDX2IO+	2.00	EA
20	Wall Network Audio Bluetooth Interface in each room	Dante and AES67 Audio Interface Bluetooth, with two RCA line level inputs and a 3.5mm TRS line level input	Atterotech unD6IO-BT	2.00	EA
21	Ceiling Array Microphone in each room	Ceiling array microphone with eight steerable lobes, DSP, 24" ceiling grid installation, white finish	Shure MXA910W-A	2.00	EA
22	Core Processor located in IT closet 100.1 Rack	networked audio channels, 24 channels of analog I/O, including 8 configurable Flex channels; 16x AEC processors Up to 32 x 32 Dante audio channels (8 x 8 included); USB AV bridging (16 x 16 audio + Q-SYS camera support); Full-featured Q-SYS Control engine (with optional feature license); External USB audio device host; Up to 4x VoIP instances	QSC Core 110f	1.00	EA

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Line	System Component	Description	Basis of Design	Qty	Unit
23	Power Amplifier located in IT closet 100.1 Rack	4-Channel 500W/CH Q-SYS Network Amplifier, Lo-Z, 70V, 100V direct drive, FlexAmp™, Mic/line Inputs, 100-240v	QSC CX-Q 2K4	1.00	EA
24	Ceiling Speakers	6.5" Two-way recessed ceiling speakers	QSC AcousticDesign Series QSC AD-C6T-WH	12	EA
25	Assistive Listening System in each room	Assistive Listening System with transmitter, two (2) receivers, two (2) ear phone neck loop lanyards, two (2) ear speakers, charging tray, signage	LS-90 ListenIR iDSP Level I System	2.00	EA
26	Cabling, connectors, device plates, adapters, and misc components	Various	Various	1.00	EA

2.5 AV SYSTEM TYPE 2: DIGITAL SIGNAGE

- A. Refer to drawings for identification of digital signage flat panel locations.
- B. Basis of Design Equipment List:

Line	System Component	Description	Basis of Design	Qty	Unit
1	System Displays and Outputs				
2	Flat Panel Display	Flat panel commercial display, Rooms: <ul style="list-style-type: none"> • 65" nominal diagonal Break Room 164 • 65" nominal diagonal Field OPS Room 165 • 43" nominal diagonal Display at Lobby & Customer Vestibule 100 	NEC ME651-AVT3, M431-AVT3 or Samsung Commercial grade, LG Commercial grade	1.00	EA

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Line	System Component	Description	Basis of Design	Qty	Unit
3	System Sources/Inputs				
4	Digital Signage Player	Network Digital Signage Player and Software Support and Maintenance agreement	BrightSign XT4	1.00	EA
5	Infrastructure				
6	Flat Panel Mount and Backbox	Low-Profile In-Wall Swing Arm Mount with backbox	Chief Manufacturing TS525TU TA500; TS318TU TA501	1.00	EA
7	Surge Protector	In-wall Storage Box with 4 Receptacle Filter & Surge, white with flange, and AV Component Adapter Bracket	Middle Atlantic PD-28-SP Surge Protector	1.00	EA
8	Cabling, connectors, device plates, adapters, and misc components	Various		1.00	LS

PART 3 - EXECUTION

3.1 GENERAL

- A. In various rooms, the audiovisual cabling and faceplates shall be provided in varying configurations according to the layout and equipment required in the space. The AV Contractor shall carefully note specific configuration required for each space and provide cabling and routing to meet the functional requirements of the Owner.
- B. Provide all calibration and adjustment required for the audiovisual system to perform to its capability and as finally approved by the Owner and Engineer.
- C. Coordinate entire installation of projection system, ceiling mounted projector, final ceiling mount location, and projection screen location. Position projector location such that the standard lens is used (unless otherwise stated) and no digital keystone correction is required. The final location of all cabling, raceways and faceplates shall be coordinated with the final projector location.

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- D. Grades, elevations, and dimensions shown on the drawings are approximately correct; however, field check and otherwise verify such data at the site before proceeding with the work. Make necessary survey equipment available at all times and make use of such equipment wherever necessary to properly install equipment.
- E. Due to the schematic nature and small scale of the audiovisual drawings, it is not possible to indicate exact locations, offsets, fittings, access panels, pull boxes, and miscellaneous parts which may be required to form a complete system. The drawings are generally indicative of the work to be installed. Arrange work accordingly furnishing necessary parts and equipment as may be required to meet the various conditions and to provide a complete installation.

3.2 LABELING AND IDENTIFICATION

A. Cable Labeling

1. Label each end of each cable with its identification number prior to pulling. Locate labels at a location which will not be mutilated or destroyed when cables are dressed for terminal installation.
2. Use adhesive type labels for all communications cable labels.
3. Affix labels to cables – marking cable is not permitted.
4. Label both ends of each patch cord provided as part of the system.

B. Labeling of Pathways

1. Pathways shall be marked at each endpoint and at all intermediate pull or junction boxes. In the case of partitioned pathways (i.e., innerduct) each partition shall have a unique identifier.
2. Label pathways using the appropriate abbreviation and a number.
3. Use adhesive type labels.

C. Labeling of equipment racks, cabinets, and frames

1. On each equipment rack, distribution frame, and cabinet, provide a nameplate with white background and black lettering. The nameplate shall be minimum 1/2 inch high and have gothic style font. The nameplate shall be phenolic with engraved designation. Additionally, all rack mounted power strips and receptacles on racks, frames, or cabinets shall be labeled with panel name and circuit number.

3.3 TRAINING

- A. All workmanship and fine tuning of equipment shall be performed to optimize the system performance and fidelity of the audiovisual systems. Final configuration of

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systems shall be approved by the Owner and Professional before final acceptance and training commences.

- B. The AV Contractor shall submit a detailed outline of the training courses to be approved by the Owner prior to training beginning.
- C. The AV Contractor shall provide training for the Owner’s personnel for audiovisual systems. This training shall consist of the following:
 - 1. Eight (8) hours for technical staff, broken into four (4) 2 hour sessions.
- D. The contents of the training will be submitted for approval prior to providing the training.
- E. Training to include sign in sheet for record of attendees.

3.4 WARRANTY

- A. Guarantee material, equipment and labor for a period of one (1) year from date of substantial completion. Replace defective material and workmanship furnished and installed and other work and equipment damaged thereby. In addition this warranty period shall cover all software updates required due to patches for software “bugs” and software compatibility issues. This shall include all upgrades required in order to be compatible with the Owner’s Data Network during the warranty period.
- B. In addition to the one (1) year guarantee, furnish any warranties or guarantees that come with specific pieces of equipment that exceed this guarantee. These additional warranties shall be given to the Owner for the time period specified.
- C. Any defects arising during this warranty period shall be corrected without cost to the Owner. Provide telephone and remote support to the Owner within two (2) hours of initial Owner contact during normal business hours. Equipment providing comparable functionality shall be provided within two business days. Equipment shall be replaced with like make and model within two weeks.
- D. The AV Contractor shall consider the possibility of allowing Owner’s trained maintenance personnel to affect repairs of crucial nature, even before the service representative arrives at the site. For this purpose, a stock of necessary spare parts may be maintained at the facility.

3.5 COORDINATION

- A. Coordinate with all Contractors, Owner, and Owner’s service providers for providing, testing and certifying all of the audiovisual equipment, infrastructure, and supporting hardware and raceways. Provide and initiate coordination needed for fully functioning

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audiovisual system prior to the scheduled project completion date. Specifically coordinate with the Owner’s cable television service provider and the Owner’s network administrator for integration between the audiovisual systems and the Owner’s IP network.

- B. Coordinate and furnish in writing to others, including the Architect, any information necessary to permit the work of all contractors to be installed satisfactorily and with the least possible interference or delay.
- C. Devices and appurtenances which are to be installed in finished areas shall be coordinated with the Architect for final approval as it relates to location, finish, materials, color, and texture.
- D. When work is installed without proper coordination, changes to this work deemed necessary by the Architect shall be made to correct conditions without any extra cost to the Owner.

3.6 LOCATIONS

- A. Coordinate and apply for detailed and specific information regarding the location of equipment as the final location may differ from that indicated on the drawings. Outlets, equipment or wiring improperly placed because of failure to obtain this information shall be relocated and re-installed without additional expense to the Owner.
- B. The design shall be subject to such revisions as may be necessary to overcome building obstructions. No changes shall be made in location of outlets or equipment without written consent of the Architect and Owner.
- C. Unless otherwise mentioned or indicated, mounting heights of outlets are shown on the drawings or in the specification. Dimensions given shall be considered to be from center of outlet to finished floor.
- D. Coordinate the exact location and elevation of all electrical devices and fixtures with the architectural interior elevation plan and reflective ceiling plan prior to installation.
- E. Properly rough in for the electrical conduit and equipment under this contract and modify as required for coordination during the construction period.

3.7 SCAFFOLDING

- A. Furnish and erect scaffolding and ladders required in the installation of wiring, equipment and fixtures.

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3.8 INSTALLATION

- A. General: Install system in accordance with NFPA 70 and other applicable codes. Install equipment in accordance with manufacturer's written instructions and the Industry Standard EIA/TIA 568 and 569.
- B. Wiring Methods: Install wiring in raceway except within consoles. Conceal wiring except in unfinished spaces.
- C. Control Circuit Wiring: Install control circuits in accordance with NFPA 70 as indicated. Provide conductors as recommended by system manufacturer to provide control functions as indicated or specified.
- D. Wiring within Enclosures: Provide adequate length of conductors, Bundle, lace and train the conductors to terminal points with no excess. Provide and use lacing bars.
- E. Provide physical isolation from each other for speaker-microphone, line-level, speaker-level, and power wiring. Run in separate raceways, or where exposed or in same enclosure, provide 12 inch minimum separation between conductors to speaker-microphone and adjacent parallel power and telephone wiring. Provide physical separation as recommended by equipment manufacturer for other intercommunication system conductors.
- F. Splices, Taps, and Terminations: Make splices, taps, and terminations on numbered terminal strips in junction, pull, and outlet boxes, terminal cabinets and equipment enclosures.
- G. Identification of Conductors and Cables: Use color coding of conductors and apply wire and cable marking tape to designate wires and cables so all media are identified in coordination with system wiring diagrams. Splicing inline or in wire pathways is not permissible.
- H. Repairs: Wherever walls, ceilings, floors, or other building finishes are cut for installation, repair, restore, and refinish to original appearance.

3.9 GROUNDING

- A. Provide equipment grounding connections for systems as indicated. Tighten connections to comply with tightening torque specified in UL 486A to assure permanent and effective grounds.
- B. Ground equipment, conductor, and cable shields to eliminate shock hazard and to minimize to the greatest extent possible, ground loops, common mode returns, noise

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pickup, cross talk, and other impairments. Provide 5 ohm ground at equipment location. Measure, record, and report ground resistance.

3.10 WIRING INFORMATION

- A. When more than one loudspeaker is used in the same area, all speakers in that area must be connected in phase with each other.
- B. Loudspeaker cable shall be as herein before specified and shown on the drawings, and shall be manufactured by West Penn, Belden, or approved equal. Furnish and install all necessary interconnecting wire for the program system. All conductors shall be installed in concealed conduits except where specifically approved elsewhere.
- C. All speaker cable shields shall be grounded at the amplifier only. A separate #6 copper ground lead shall be run from the control rack to the ground wire at the AC entrance cable.
- D. In addition to the above, all equipment shall be grounded in accordance with NEC regulations.
- E. Certain "Inherent Characteristics" of the system require special attention during all phases of installation. Install all system components and associated wiring per the instructions of the manufacturer or his authorized distributors recommendations. All conductors and wiring must be sufficiently isolated from the magnetic field produced by alternating current, or any current produced by any other unrelated wiring that would interfere with the performance of the system. Codes and conditions may require changes to the cabling system.

3.11 FIELD QUALITY CONTROL

- A. Provide services of a factory trained service representative to supervise the field assembly and connection of components and the pre-testing, testing, and adjustment of the system.
- B. Upon completing installation of the system, align, adjust, and balance the system and perform complete pre-testing. Determine, through pre-testing, the conformance of the system to the requirements of the Drawings and Specifications. Correct deficiencies observed in pre-testing. Replace malfunctioning or damaged items with new and retest until satisfactory performance and conditions are achieved.
- C. Upon completion of pre-testing, notify the Architect a minimum of 10 days in advance of acceptance test performance schedule and conduct tests in his presence. Provide a written record of test results.

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- D. Perform an operational system test to verify conformance of system to these specifications. Perform tests that include originating and page material at intercommunication stations and observing sound reproduction for proper routing and volume levels and for freedom from noise and distortion.

3.12 TESTING

A. Distortion Test

- 1. Measure distortion at normal gain settings and rated power. Feed signals at frequencies of 150, 200, 400, 1000, and 2500 Hz into each amplifier, and measure the distortion in the amplifier output. The maximum acceptable distortion at any frequency is 5 percent total harmonics.

B. Acoustic Coverage Test

- 1. Feed pink noise into the system using octaves centered at 4,000 and 500 Hz. Use a sound level meter with octave band filters to measure the level at five locations in each zone. the maximum permissible variation in level is plus or minus 3 dB and the levels between adjacent zones must not vary more than plus or minus 5 dB.

C. Power Output Test

- 1. Measure the electrical power output of each amplifier at normal gain setting at 150 Hz, 1000 Hz, and 2500 Hz. The maximum variation in power output at these frequencies must not exceed plus or minus 3 dB.

D. Retesting

- 1. Rectify deficiencies indicated by tests and completely retest work affected by such deficiencies at AV Contractor’s expense. Verify by the system test that the total system meets the specifications and complies with applicable standards.

3.13 INSPECTION

- A. Make observations to verify that units and controls are properly labeled, and interconnecting wires and terminals are identified. Provide a list of final tap settings of speaker line matching transformers.

3.14 ENVIRONMENTAL AIR PLENUMS

- A. In spaces over hung ceiling which are used for environmental air handling purposes as defined by Article 300.22C of the National Electric Code, power data and

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communications cable must be in conduit or of the type cable rated for air plenum use. Cable type and/or raceway is generally indicated on the electrical drawings and specifications although the AV Contractor shall be responsible to clearly define ceiling space used for environmental air purposes.

END OF SECTION 27 41 00

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SECTION 28 00 00 - GENERAL ELECTRONIC SAFETY AND SECURITY PROVISIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Project Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
1. Scope of Work.
 2. Intent of Drawings.
 3. Pre-Bid Site Visit.
 4. Definitions.
 5. General Standards of Materials.
 6. Products and Substitutions.
 7. Applicable Codes.
 8. Guarantees and Certificates.
 9. Quiet Operation and Vibration Control.
 10. Temporary Shutdown of Existing Systems.
 11. Coordination.
 12. Shop Drawings, Product Data, and Samples.
 13. Owner Instruction.

1.3 SCOPE OF WORK

- A. The scope of the work included under Division 28 of the specifications shall include complete systems as shown in the Contract Documents and specified herein. Any work reasonably inferable or required to result in a complete installation or the intended operation and performance of the systems, shall be included in the Base Bid except where there is specific reference to exclusion and incorporation in other quotations.
- B. A brief written Scope of Work appears in Division 01.

1.4 INTENT OF DRAWINGS

- A. Provide complete and functional systems for the project. The systems shall conform to the details stated in the specifications and shown on the drawings. Items or work not shown or specified, but required for complete systems, shall be provided and conform with accepted trade practices. The drawings and specifications are presented to define specific system requirements and serve to expand on the primary contract

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requirements of providing complete systems. The drawings are diagrammatic and indicate the general arrangement and routing of the systems included in this contractors work.

- B. Do not scale the drawings. Because of the scale of the drawings, it is not possible to indicate offsets, fittings, valves, or similar items which may be required to provide complete operating systems. Carefully investigate conditions affecting the work associated with this project. Check and verify dimensions and existing conditions at the site. Install systems in such a manner that interferences between pipes, conduit, ducts, equipment, architectural and structural features are avoided. Provide items required to meet the project conditions without additional cost to the owner.
- C. These documents may not explicitly disclose final details required for a complete systems installation; however, contractors shall possess the expertise to include the necessary appointments of complete operating systems.
- D. Contractors shall be "Experienced" (as defined in Division 01) in this type of construction and realize the extent of the work required.

1.5 PRE-BID SITE VISIT

- A. Bidders shall visit the site and become completely familiar with existing conditions prior to submitting their bid. No extra charges shall be allowed as a result of existing conditions.

1.6 DEFINITIONS

- A. Specific terminology, as used herein, shall have the following meanings:
 1. "Furnish"...Supply and deliver to project site, ready for unloading, unpacking, assembly,
 2. "Finished Space" ...Space other than mechanical rooms, electrical rooms, furred spaces, pipe chases, unheated spaces immediately below roof, space above ceilings, unexcavated spaces, crawl spaces, tunnels, and interstitial spaces.
 3. "Conditioned"...Spaces directly provided with heating and cooling.
 4. "Unconditioned"...Spaces without heating or cooling including ceiling plenums.
 5. "Indoors"...Located inside the exterior walls and roof of the building.
 6. "Outdoors"...Located outside the exterior walls and roof of the building.

1.7 GENERAL STANDARDS OF MATERIALS

- A. Equipment and materials, unless otherwise noted, shall be new and of first quality, produced by manufacturers who have been regularly engaged in the manufacture of these products for a period of not less than five years.

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- B. Equipment of one type shall be the products of one manufacturer; similar items of the same classification shall be identical, including equipment, assemblies, parts and components.
- C. Materials furnished shall be determined safe by a nationally recognized testing organization, such as Underwriters' Laboratories, Inc., or Factory Mutual Engineering Corporation, and materials shall be labeled, certified or listed by such organizations. Where third party certification is required for packaged equipment, the equipment shall bear the appropriate certification label.
- D. With respect to custom made equipment or related installations which are constructed specially for this project, the manufacturer shall certify the safety of same on the basis of test data. The Owner shall be furnished copies of such certificates.

1.8 PRODUCTS AND SUBSTITUTIONS

- A. Where a specific manufacturer's product is specified, the Contract Amount shall be based on that product only. Any substitutions from the specified product shall be offered as a Substitution Request. Refer to Division 01 for requirements. Substitutions shall not be permitted after the bidding phase without a Substitution Request Form included with the bid.
- B. Where several manufacturer's products are specified, the Contract Amount shall be based upon the specified products only. Any substitutions from the specified products shall be offered as a Substitution Request. Refer to Division 01 for requirements. Substitutions shall not be permitted after the bidding phase without a Substitution Request Form included with the bid.

1.9 APPLICABLE CODES

- A. Materials furnished and work installed shall comply with applicable codes listed in Division 01, with the requirements of the local utility companies, and with the requirements of governmental departments or authorities having jurisdiction.

1.10 GUARANTEES AND CERTIFICATES

- A. Defective equipment, materials or workmanship, including damage to the work provided under other divisions of this contract resulting from same, shall be replaced or repaired at no extra cost to the Owner for the duration of the stipulated guarantee periods.
 - 1. Unless specifically indicated otherwise, the duration of the guarantee period shall be one (1) year following the date of Substantial Completion. Temporary operation of the equipment for temporary conditioning, testing, etc., prior to occupancy will not be considered part of the warranty period.

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1.11 TEMPORARY SHUTDOWN OF EXISTING SYSTEMS

- A. Plan installation of new work and connections to existing work to insure minimum interference with regular operation of existing systems. Some temporary shutdown of existing systems may be required to complete the work.
- B. Submit to the Owner in writing for approval, proposed date schedule, time, and duration of necessary temporary shutdowns of existing systems. Submit schedule at least fifteen (15) calendar days in advance of intended shutdown. Shutdowns shall be made at such times as shall not interfere with regular operation of existing facilities and only after written approval of Owner. The Owner reserves the right to cancel shutdowns at any time prior to the shutdowns. To insure continuous operation, make necessary temporary connections between new and existing work. Bear costs resulting from temporary shutdowns and temporary connections. No additional charges shall be allowed for Owner-canceled shutdowns that must be rescheduled.
- C. Shutdowns must be performed by the Owner. Do not shut-down any system. The Owner reserves the right to require a walk-through of any shutdown prior to the shutdown. Following electrical shutdowns, verify that affected motors are rotating in the proper direction. Bear costs associated with reverse rotated motors.

1.12 COORDINATION

- A. Coordinate and furnish in writing to the Architect information necessary to permit the work to be installed satisfactorily and with the least possible interference or delay.
- B. Coordination drawings shall be prepared as defined in Division 01. No installation of permanent systems shall proceed until the coordination drawings are reviewed by the Architect. No extra charges shall be allowed for changes required to accommodate installation of systems provided under other divisions of this contract.
- C. Coordination drawings shall be developed from individual system shop drawings and contractor fabrication drawings. Electronic or other reproduced engineering design drawings used as coordination drawings are not acceptable.
- D. When work is installed without proper coordination, changes to this work deemed necessary by the Architect shall be made to correct the conditions without extra cost to the Owner.
- E. The value of the coordination drawings shall be identified as a line item in the Schedule of Values. If the coordination drawings are not submitted as required, their value shall credited to Owner in accordance with the provisions of Article 7 of the General Conditions. The value of coordination drawings shall be a minimum of two (2.0) percent of this Contract Amount.

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1.13 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

- A. Shop drawings, product data, and samples shall be submitted in accordance with the provisions of Division 01.
- B. The following shall be submitted by the Contractor for review:
 - 1. Scale shop drawings showing system components with sizing indicated, including but not limited to:
 - a. equipment locations.
 - b. raceways
 - c. insert and sleeve locations
 - d. hangers, anchors and guides
 - e. expansion joints
 - f. access doors
 - 2. Product data for system components and materials (including construction standards).
 - 3. Samples of finishes and trim exposed to view, such as fixture trim, escutcheon plates and similar items.
- C. The value of shop drawings, product data and samples shall be identified as a line item in the Schedule of Values. If the shop drawings, product data and samples are not submitted as required, their value shall credited to Owner in accordance with the provisions of Article 7 of the General Conditions. The value of these items shall be a minimum of one (1.0) percent of this Contract Amount.

1.14 OWNER INSTRUCTION

- A. After final tests and adjustments have been completed, furnish the services of qualified personnel to instruct representatives of the Owner in the operation and maintenance procedures for equipment and systems installed as part of this project. Operation and maintenance instructions for major items of equipment shall be directly supervised by the equipment manufacturer's representative. Supply qualified personnel to operate equipment for sufficient length of time as required to meet governing authorities' operation and performance tests and as required to assure that the Owner's representatives are properly qualified to take over operation and maintenance procedures. Minimum instruction period shall be 24 man hours. The instruction period shall be broken into segments at the discretion of the Owner.
 - 1. Notify the Architect, the Owner's representative and equipment manufacturers' representatives, by letter, as to the time and date of operating and maintenance instruction periods approved by the Owner at least one (1) week prior to conducting same.

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2. Forward to the Architect the signatures of all those present for the instruction periods.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 28 00 00

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SECTION 31 10 00 - CLEARING AND GRUBBING

PART 1 GENERAL

1.01 SCOPE

- A. Work specified in this section consists of clearing and grubbing within areas specified in the Contract Documents or as directed by the OWNER's representative. Work under this section includes removal and disposal of all trees, brush, stumps, grass, roots, and other such protruding objects. Also included is the removal and disposal of buildings, structures, existing pavement, other existing facilities, and debris not required to remain or to be salvaged that is necessary to prepare the area for the proposed construction. CONTRACTOR shall notify all utility companies or utility owners (both public or private) of their intent to perform such work and shall coordinate field location of utility lines prior to commencement of construction.
- B. Other miscellaneous work considered necessary for the complete preparation of the overall project site is also included under this section. Work includes, but is not limited to, the following:
1. Plugging of wells encountered within the project limits which are to be abandoned.
 2. Leveling and restoration of terrain outside the limits of construction for purposes of facilitating maintenance and other post-construction operations.
 3. Trimming of certain trees and shrubs within project limits for utilization in subsequent landscaping of the project.
 4. Plugging or sealing of culvert pipes or other structures to prevent erosion or collapse of adjacent soils.

1.02 SPECIFICATION AND STANDARDS REFERENCE

- A. Where supplementary specifications or standards such as ASTM, AWWA, AASHTO, etc. are referenced, such references shall be latest edition.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 CLEARING AND GRUBBING

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- A. Clearing and Grubbing shall consist of complete removal and disposal of all items stated in Article 1.01 which are not specified for removal under other items of the contract. The CONTRACTOR shall obtain all permits/approvals necessary for disposal at their own expense. The CONTRACTOR shall obtain tree removal permits.

- B. Unless otherwise shown in the plans or Contract Documents, Standard Clearing and Grubbing shall be done within the following areas:
 - 1. All areas where any type of excavation is to be done.
 - 2. All areas where any type of embankment will be constructed.
 - 3. All areas where any type of structure, including pipe culverts or pipe lines, will be installed or constructed.
 - 4. All areas where any type of pavement will be constructed.
 - 5. Other areas designated in the plans or by the specifications.

- C. Depths of Removal
 - 1. In areas listed below, all roots and other debris shall be removed to a depth of at least one foot below ground surface. The surface shall then be plowed to a depth of at least six inches and all roots exposed shall be removed to a depth of at least one foot. All stumps including subsurface roots shall be completely removed to the satisfaction of the ENGINEER. Trees shall be removed so roots are pulled out rather than broken or sawed off. Areas requiring the removal methods stated in this paragraph are as follows:
 - a. Excavation areas where the excavated material is to be used in embankment construction under permanent structures such as but not limited to pavement and buildings.
 - b. Embankment areas under permanent structures such as but not limited to pavement, buildings, sewage treatment facilities, bridges, etc.
 - c. Excavation areas where roots or similar vegetation in the top one foot would interfere with disking, harrowing, or finish grading operations prior to seeding or landscaping.
 - d. Lots and building areas.
 - 2. In all other excavation areas not listed above where clearing and grubbing is to be done, all roots, stumps, and debris protruding through or appearing on

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the surface of the completed excavation shall be removed or cut off below the excavated surface.

3. In all other embankment areas not listed above where clearing and grubbing is to be done, all roots, stumps, and debris protruding through or appearing on the surface shall be removed to a depth of at least one foot below the surface but no plowing or harrowing will be required in these areas.
- D. Trees to Remain: As an exception to the above provisions, where so directed by the OWNER's representative, desirable trees within the clearing limits shall be protected, left standing, and trimmed to prevent damage to limbs during construction. No equipment shall stand, stop, or travel across or inside the drip line of any trees or vegetation designated to be saved or protected.
 - E. Boulders: Any boulders laying on the top of the existing surface or otherwise encountered during the clearing and grubbing shall be removed and disposed of by the CONTRACTOR in areas provided by the CONTRACTOR. As an alternate to off-site disposal and at the CONTRACTOR's expense, he may elect to utilize these boulders in embankments provided the conditions of Article 3.04 in Section 02820 are satisfied. Any breaking or splitting of boulders that may be necessary to comply with size requirements for embankment shall be incidental to the cost of clearing and grubbing. No boulders or rock shall be left or placed in building pads, lots, or building embankment areas.

3.02 SELECTIVE CLEARING AND GRUBBING

- A. Selective clearing and grubbing shall consist of removing and disposing of all vegetation, obstructions, etc, as provided above except that in non-structural areas where the CONTRACTOR so elects, roots may be cut off flush with the ground surface. Stumps shall be completely removed. Undergrowth shall be completely removed except in areas designated by the OWNER's representative for aesthetic purposes.
- B. Desirable trees, that are designated by the OWNER's representative to remain, shall be protected and trimmed in such a way to avoid damage to limbs during construction.

3.03 SPECIAL CLEARING AND GRUBBING

- A. In certain areas that are inaccessible by machines or are considered environmentally sensitive, ENGINEER may specify Special Clearing and Grubbing. Where listed as a separate pay item, Special Clearing and Grubbing shall consist of removal and disposal of all trees, brush stumps, roots, debris or other objects protruding through the surface by cutting off flush with the ground surface. The use of any machinery that would disturb the original ground surface condition will not be permitted.

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3.04 ERADICATION OF EXOTIC VEGETATION

- A. Where listed as a separate pay item, Eradication of Exotic Vegetation shall consist of removal and disposal of Australian Pine, Melaleuca, Brazilian Pepper, and other species specifically stated on the plans or specified herein. Also included shall be the removal of the subsurface root system for each exotics.
- B. In areas where removal is modified to permit cutting off flush with in the ground surface, stump and root system shall be treated with an agency approved chemical herbicide that will ensure the eradication of the root system.
- C. Within the limits established for the Eradication of Exotic Vegetation, all other trees, brush, etc. not classified as exotic shall be removed, unless designated in the field by the OWNER's representative to remain. The removal and disposal of non-exotic vegetation shall conform to the provisions of Article 3.01.

3.05 REMOVAL OF EXISTING PAVEMENT

- A. Work specified in this article consists of the removing and disposing of existing pavement surfaces such as, but not limited to, pavement, sidewalk, curb, and gutter where shown in the plans, or required to be removed during construction operations, or as required by the ENGINEER.

3.06 REMOVAL OF EXISTING STRUCTURES

- A. Work specified in this article shall include removal and disposal of existing buildings, bridges, pipes, and structures of whatever type as specifically shown in the plans to be removed or as otherwise specified for removal in the Contract Documents. Also included are structures of whatever type or portions thereof which are encountered during construction operations. Where partial removal of a structure is approved by the ENGINEER, the portion of the existing structure shall be backfilled, plugged, or filled in such a way that will prevent the settlement, movement, erosion or collapse of the adjacent soils.

3.07 BURNING ON-SITE

- A. Unless otherwise stated in the Contract Documents, burning may be permitted within the project limits provided the burning operation complies with all applicable laws, ordinances, and other regulatory agencies. All permits required shall be obtained by the CONTRACTOR prior to the start of burning and all permit regulations shall be strictly adhered to. All burning shall be done at locations where trees and shrubs adjacent to the cleared area will not be harmed.

3.08 DISPOSAL OF MATERIALS

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- A. Timber, stumps, roots, brush, boulders, rubbish, and other objectionable material resulting from work specified in this section shall be disposed of off-site in locations provided by the CONTRACTOR.

3.09 OWNERSHIP OF MATERIALS

- A. Except as may be otherwise stated in the Contract Documents, all buildings, structures, appurtenances and other materials removed by the CONTRACTOR shall become the property of the CONTRACTOR, to be disposed of in areas provided by him.

PART 4 MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

- A. General: For the various items of work specified in this section when listed as a separate pay item, payment shall be made by the unit price or the lump sum amount as established in the Contract Documents. Where no separate pay item is established, the cost of all such work shall be included in the various scheduled items of work specified in the Contract Documents, except as provided below.
- B. Clearing and Grubbing: Measurement of Clearing and Grubbing shall include only the areas specified in the Contract Documents that are required to be cleared to permit the construction of the various items of work. Areas that are cleared for convenience, access, or other purposes that are not a requirement of construction will not be measured for payment.
- C. Selective Clearing and Grubbing: Measurement of Selective Clearing and Grubbing shall include all areas shown in the plans or designated in the field by the OWNER's representative. This measurement shall include the total area within the limits of Selective Clearing and Grubbing and no deduction shall be made for areas in which desirable trees and brush are designated to remain. Where the limits of Selective Clearing and Grubbing are shown on the plans or otherwise established in the Contract Documents but no separate pay item established, the measurement of such work shall be included in the quantity or lump sum amount of "Clearing and Grubbing".
- D. Special Clearing and Grubbing: Measurement of Special Clearing and Grubbing shall include all areas shown in the plans or designated in the field by the OWNER's representative. This measurement shall include only actual areas cleared by the hand method and shall not include areas cleared by other methods or areas that remain in their original condition. Where the limits of Special Clearing and Grubbing are shown on the plans or otherwise established in the Contract Documents but no separate pay item established, the measurement of such work shall be included in the quantity or lump sum amount of "Clearing and Grubbing".

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- E. Eradication of Exotic Vegetation: Measurement of Eradication of Exotic Vegetation shall include areas shown on the plans or designated in the field by the OWNER's representative. This measurement shall include the total area within the limits established for Eradication of Exotic Vegetation and include the areas within these limits where non-exotic vegetation is removed. Where the OWNER's representative has designated desirable vegetation to remain within these limits, no deduction of area shall be made for the "saved" areas.

Where limits of Eradication of Exotic Vegetation are shown on the plans or otherwise established in the Contract Documents but no separate pay item established, the measurement of such work shall be included in the quantity or lump sum amount of "Clearing and Grubbing."

- F. Removal of Existing Pavement: When a separate pay item is established for the Removal of Existing Pavement, the quantity to be paid shall be by the square yard for the actual quantity removed and disposed of off-site. For curb and gutter, slope pavement, and other irregular areas, the measurement shall be generally taken as an approximate horizontal surface. Where lump sum payment is provided, such payment shall be compensation for the removal of areas shown on the plans or otherwise specified in the Contract Documents.

Where a separate pay item is established for curb, gutter, or curb and gutter removal, the measurement shall be measured by the lineal foot at the flow line of the gutter or at the top of curb where there is no gutter. Where separate pay has not been provided for curb or curb and gutter removal, the measurement shall be included in the area for pavement removal as stated above.

When no separate payment is provided for the Removal of Existing Pavement and no applicable item of excavation or embankment covering such work is listed, the costs of this work shall be included in the contract price for the item of Clearing and Grubbing or for the pipe or other structure of which the pavement removal is required.

- G. Removal of Existing Structures: When separate payment for Removal of Existing Structures or Removal of Existing Buildings is provided, the work shall be paid for at the contract lump sum price. When direct payment is not provided, the cost of such removal and disposal shall be included in the contract price for Clearing and Grubbing or if no clearing and grubbing is included, in the compensation for the other items covering the new structure to be constructed.

- H. Burning: Unless otherwise specified in the Contract Documents, and where permitted, burning shall be considered as being part of the process of disposing of materials and the cost of such work shall be included in the item which requires the disposal of materials.

4.02 BASIS FOR PAYMENT

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- A. General: Prices and payments for the various work items included in this section shall constitute full compensation for all work described herein and shall include all removal, disposal, protecting, trimming, breaking, plugging, eradication, or any other items specified in this section.
- B. Pay Items: For all work specified in this section, payment shall be made in accordance with the list of pay items established or as otherwise defined in the Contract Documents. The description of a pay item in the proposal section may vary from the descriptions stated in this section.

END OF SECTION 31 10 00

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SECTION 31 31 16 - TERMITE CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Chemical soil treatment.

1.2 RELATED REQUIREMENTS

- A. Section 03 05 05 - Underslab Vapor Barrier: Vapor barrier placement under concrete slab-on-grade.

1.3 REFERENCE STANDARDS

- A. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2018a.
- B. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2017 (Reapproved 2023).
- C. Title 7, United States Code, 136 through 136y - Federal Insecticide, Fungicide and Rodenticide Act; 2019.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate toxicants to be used, composition by percentage, dilution schedule, intended application rate.
- C. Test Reports: Indicate regulatory agency approval reports when required.
- D. Manufacturer's Certificate: Certify that toxicants meet or exceed specified requirements.
- E. Manufacturer's Instructions: Indicate caution requirement.
- F. Manufacturer's Certificate: Certify that toxicants meet or exceed specified requirements.

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- G. Record and document moisture content of soil before application.
- H. Installer Qualifications: Company specializing in performing work of the type specified and with minimum three (3) years of documented experience.
- I. Maintenance Data: Indicate re-treatment schedule .
- J. Warranty: Submit warranty and ensure that forms have been completed in Owner's name.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing this type of work and:
 1. Having minimum of three years documented experience.
 2. Approved by manufacturer of treatment materials.
 3. Licensed in the State of Kansas.

1.6 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year installer's warranty against damage to building caused by termites.
 1. Include coverage for repairs to building and to contents damaged due to building damage. Repair damage and, if required, re-treat.

PART 2 PRODUCTS

2.1 CHEMICAL SOIL TREATMENT

- A. Toxicant Chemical: EPA Title 7, United States Code, 136 through 136y approved; synthetically color dyed to permit visual identification of treated soil.
- B. Diluent: Recommended by toxicant manufacturer.
- C. Manufacturers:
 1. Bayer Environmental Science Corp: www.backedbybayer.com/pest-management/#sle.
 2. FMC Professional Solutions: www.fmcprosolutions.com/#sle.
 3. Syngenta Professional Products: www.syngentaprofessionalproducts.com/#sle.
 4. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Mixes: Mix toxicant to manufacturer's instructions.

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- E. Toxicant Chemical: EPA approved; synthetically color dyed to permit visual identification of treated soil.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that soil surfaces are unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.
- B. Verify final grading is complete.

3.2 APPLICATION - CHEMICAL TREATMENT

- A. Comply with requirements of U.S. EPA and applicable state and local codes.
- B. Spray apply toxicant in accordance with manufacturer's instructions.
- C. Apply extra treatment to structure penetration surfaces such as pipe or ducts, and soil penetrations such as grounding rods or posts.
- D. Re-treat disturbed treated soil with same toxicant as original treatment.
- E. If inspection or testing identifies the presence of termites, re-treat soil and re-test.

3.3 INSTALLATION - SITE-APPLIED TERMITICIDE

- A. Comply with manufacturer's written instructions.

END OF SECTION 31 31 16

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SECTION 32 11 00 - LIMEROCK BASE COURSE AND STABILIZED SUBGRADE

PART 1 GENERAL

1.01 SCOPE

- A. The scope of this Section consists of furnishing materials and methods for construction of a crushed limerock base course and stabilized subgrade in accordance with the Plans and Specifications.

1.02 SPECIFICATION AND STANDARDS REFERENCE

- A. Where supplementary specifications or standards such as ASTM, AWWA, AASHTO, etc. are referenced, such references shall be latest edition.

PART 2 PRODUCTS

2.01 LIMEROCK BASE

- A. Material for limerock base shall meet the requirements of Section 911 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, hereinafter referenced as FDOTSPEC.
- B. CONTRACTOR shall pay for and furnish samples of materials to the approved testing laboratory for physical and chemical analysis, together with optimum moisture and density relationships of the base material. Test reports and samples shall be required of every limerock supplier furnishing material for the work. The source or sources of materials proposed for use shall be designated and shall not change without written consent of the ENGINEER. During the course of construction, ENGINEER may require additional tests if any visible variation occurs.
- C. Limerock shall be obtained from pits from which all overburden has been removed, prior to blasting. It shall show no tendency to air slake or undergo chemical change under exposure to weather, Limerock-Miami (or Ocala) formations shall be tested to meet the following requirements:

	LIMEROCK BASE GRADE #1	LIMEROCK BASE GRADE #2
Minimum Limerock Bearing Ratio (LBR)	100	100
Maximum Liquid Limit	35	35
Maximum Plasticity Index	Non-plastic	10/less
Maximum Percent Clay	3/less	3/less

- D. Grade #1 Limerock as placed shall be well graded, crushed material from either Miami or Ocala formations with at least 97 percent (by weight) of the material passing a 3-½ inch sieve and shall be graded uniformly down to dust with the fines

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consisting entirely of dust of fracture. Grade #2 Limerock will conform to the above except that 97 percent shall pass a 1-½ inch sieve.

2.02 SUBGRADE STABILIZATION

- A. General: Materials to be used for stabilizing shall be commercial limerock, limerock overburden, crushed or local shell meeting the requirements of Section 914 of FDOTSPEC.
- B. Limerock and Limerock Overburden: For limerock and limerock overburden, the percentage of carbonates of calcium and magnesium shall be at least 70 percent and the plasticity index shall not exceed 10 percent. The gradation of both commercial limerock and limerock overburden shall be such that at least 95 percent (by weight) of the material will pass a 3 ½ inch sieve and not less than 10 percent (by weight) of the material will pass a No. 200 sieve and the material shall be graded uniformly down to dust.
- C. Crushed Shell: Crushed shell shall be mollusk shell (i.e., oysters, mussels, clams, cemented coquina, etc.). Steamed shell will not be permitted. Shell shall meet the following requirements:
 - 1. At least 95 percent (by weight) of the material shall pass a 3-½ inch sieve and at least 50 percent (by weight) of the total material shall be retained on the No. 4 sieve.
 - 2. Not more than 15 percent (by weight) of the total material shall pass the No. 200 sieve. The determination of the percentage passing the No. 200 sieve shall be made by washing the material over the sieve.
 - 3. In the event shell meets the above requirements without crushing, crushing will not be required.
- D. Local Shell: Local shell shall consist of a naturally occurring deposit which is essentially broken mollusk shell. The gradation of the shell shall be such that at least 95 percent (by weight) of the material will pass a 3-½ inch sieve and not more than 20 percent (by weight) of the material will pass a No. 200 sieve by washing. The portion of material passing the No. 40 sieve shall have a liquid limit not greater than 30 percent and a plasticity index not greater than 10 percent.

2.03 PRIME COAT MATERIALS

- A. Material used for prime coat shall meet the requirements of FDOTSPEC 300. CONTRACTOR may select any of the specified bituminous materials for use, unless the Plans or Specifications indicate use of a specific material. Types and grades of bituminous material other than those specified above may be allowed if it can be shown the alternate material will properly perform the function of prime coat material.

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2.04 COVER MATERIAL FOR PRIME COAT

- A. If an emulsified asphalt is used for prime coats, the cover material shall consist of a sand-bituminous hot mix or screenings. Sand-bituminous hot mix shall contain from 2 to 4 percent Asphalt-Cement, viscosity Grade AC-20, and fine aggregate consisting of a clean sand or screenings. Sand shall contain no more than 10 percent (by weight) of material passing the No. 200 sieve. The gradation of screenings used along shall be such that 100 percent will pass the 3/8 inch sieve and not more than 10 percent will pass the No. 200 sieve.
- B. If material other than emulsified asphalt is used for the prime coat, cover material shall be either sand (bare or hot-asphalt coated) or screenings, at the CONTRACTOR's option. Sand shall be non-plastic and free from any appreciable amount of silt, clay balls and root particles, and from any noticeable sticks, trash, vegetation or other organic matter. Screenings shall be Miami Oolitic rock screenings.

2.05 TACK COAT

- A. Unless a specific type or grade of material is called for on the Plans or Specifications, material used for tack coat shall meet the requirements of FDOTSPEC 300.

PART 3 **EXECUTION**

3.01 CONSTRUCTION OF STABILIZED SUBGRADE

- A. Stabilized subgrade shall be constructed of roadbed soil and subgrade stabilization materials in conformance with the lines, grades, and cross-section shown on the Plans. Prior to beginning of stabilizing operations, the area to be stabilized shall have been completed to the lines shown on the Plans and to a grade parallel to finished elevation of the stabilized subgrade. Before stabilizing material is added, the elevation of the roadbed shall be such that subgrade shall conform to requirements of the typical cross-section when the work is completed.
- B. Stabilized Subgrade Minimum Bearing Value - Completed stabilized subgrade shall have minimum limerock bearing ratio value of 40 (LBR40) unless otherwise stated on the Plans or amended in the Specifications.
- C. Incorporation of Stabilizing Material and Mix-in
 - 1. Spreading and Mixing: Stabilizing material shall be placed on areas to be stabilized, and spread uniformly. Stabilizing material shall be thoroughly mixed with the soil with rotary tillers or other approved equipment which is capable of achieving a satisfactory blend. Mixing shall be done as soon as practical, but not later than one week after stabilizing material is placed on the road. The area to be stabilized shall be thoroughly mixed throughout the entire depth and width of the stabilized subgrade.

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2. Maximum Particle Size of Mixed Materials: At the completion of mixing, all particles of materials within the limits of the stabilized sub-base shall pass a 3-½ inch ring. Any particles not meeting this requirement shall be removed or shall be broken down as to meet this requirement.

3. Planting Mixing: Mixing of the soil may be accomplished by the central plant-mix method in lieu of mixing in place, provided that a uniform mixture containing the proper amount of water is achieved.

4. Depth of Mixing Stabilizing Materials: Stabilizing material shall be mixed to the nominal depth of Stabilized Subgrade shown on the Plans. The following tolerances over or under the specified depth will be allowed:

<u>Plan Depth</u>	<u>Tolerance</u>
-------------------	------------------

8" or less	1"
------------	----

Over 8"	2"
---------	----

In the event the measured depth of mixing is less than the minimum specified above, CONTRACTOR shall remix the stabilized subgrade until stabilizing material is distributed throughout the subgrade course to the required depth. ENGINEER may waive the above requirements for remixing or addition of stabilizing material and remixing for Stabilized Subgrade which serves solely as a working platform for concrete paving equipment, if the subgrade as originally mixed is firm and substantially unyielding.

5. Compacting

a. After mixing operations have been completed and requirements for uniformity, mixing depth and maximum particle size have been satisfied, sub-base shall be shaped and compacted. Minimum density acceptable at any location within the entire limits of width and depth of the sub-base will be 98 percent of the maximum density as determined by AASHTO T-180.

b. In the event CONTRACTOR elects to shape and compact the subgrade that will be underlying curb and gutter separate from the rest of the subgrade, additional density testing along those curb and gutter lines will be required at a minimum frequency of 1 test per 500 lineal feet.

c. ENGINEER may waive the above density requirement for Stabilized Subgrade which serves solely as a working platform for concrete paving equipment, if the subgrade as compacted is firm, substantially unyielding, and no areas of excessive moisture are evident.

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6. **Finish Grading:** Completed stabilized subgrade shall be shaped to conform with finished lines, grades and cross-sections indicated on the Plans. Sub-base shall be checked by the use of elevation stakes, or other means approved by the ENGINEER.
7. **Requirements for Condition of Stabilized Subgrade:** After stabilizing and compacting operations have been completed, subgrade shall be firm and substantially unyielding to the extent it will support construction equipment. All soft and yielding material, and any other portions of the subgrade which will not compact readily, shall be removed and replaced with suitable material and the whole subgrade brought to line and grade, with proper allowance for subsequent compaction.
8. **Maintenance of completed Stabilized Subgrade:** After stabilized subgrade has been completed as specified, CONTRACTOR shall maintain it free from ruts, depressions and any damage resulting from the hauling or handling of materials, equipment, tools, etc.
9. **Preparation of Subgrade**
 - a. **Embankment Subgrade Soil:** If the subgrade consists of embankment soil, CONTRACTOR before undertaking this work, shall shape and compact the subgrade to conform with the grade lines and cross-sections required for the completed work. Unless otherwise shown on the Plans, subgrade limits shall extend through the pavement area to one foot beyond the curb line or 6 feet beyond pavement edge where curbs are not employed. Unless otherwise shown on the plans, subgrade thickness shall be 12 inches.
 - b. **Undisturbed Subgrade Soil:** In-place soil under Group Classification A-4 through A-7, according to AASHTO's Soil Classification System, shall be removed and replaced unless ENGINEER directs it remain in place. Any replacement soil must be acceptable to the ENGINEER.

3.02 CONSTRUCTION OF LIMEROCK BASE

- A. Limerock (also referred to as "rock") base shall be constructed on the prepared subgrade in accordance with the Specifications and with lines, grades, and cross-sections shown on the Plans. Construction shall meet requirements of FDOTSPEC Section 200, Limerock Base.
- B. **Transporting Limerock:** Limerock shall be transported to the point where it is to be used, over rock previously placed if practical, and dumped on the end of the preceding spread. Hauling over the subgrade and dumping on the subgrade will be permitted when, in the ENGINEER's opinion, these operations will not be detrimental to the base.

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C. Spreading Limerock

1. Method of Spreading: Limerock shall be spread uniformly. All segregated areas of fine or coarse rock shall be removed and replaced with properly graded rock.
2. Number of Courses: When the specified compacted thickness of the base is greater than 6 inches, base shall be constructed in two courses. The thickness of the first course shall be approximately one-half the total thickness of the finished base, or enough additional to bear the weight of the construction equipment without disturbing the subgrade.

D. Compacting and Finishing Base

1. Single-Course Base: For single-course base, after the spreading is completed, the entire surface shall be scarified, then shaped so as to produce the required grade and cross-section after compaction.
2. Double-Course Base: For double-course base, the first course shall be cleaned of foreign material, bladed and brought to a surface cross-section approximately parallel to that of the finished base. Prior to the spreading of any material for the upper course, density tests for the lower course shall be made and ENGINEER will determine that required compaction has been obtained. After spreading of the material for the second course is completed, its surface shall be finished and shaped so as to produce the required grade and cross-section after compaction, free of scabs and laminations.
3. Moisture Content: When material does not have proper moisture content to insure the required density, wetting or drying will be required. When water is added, it shall be uniformly mixed by disking to the full depth of the course which is being compacted. Wetting or drying operations shall involve manipulation, as a unit, of the entire width and depth of the course which is being compacted.
4. Density Requirements: As soon as proper conditions of moisture are attained, material shall be compacted to a density of not less than 98 percent of maximum density as determined by AASHTO T 180. Minimum density which will be acceptable at any location outside the traveled roadway (such as crossovers) shall be 95 percent of such maximum.

- E. Testing Frequency: At least three density determinations shall be made on each day's final compaction operation on each course, and a frequency of one test per 1000 square yards or fraction thereof of surface roadway with a minimum of three tests on each course or roadway section requiring a break in the rolling pattern. Additional tests or greater frequency may be deemed necessary by the ENGINEER.

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- F. Checking: Prior to application of any bituminous materials, base shall be checked for grade, cross-section and thickness. Where excessive deviations occur, base shall be reworked by scarifying, adding additional materials, blading, rolling and re-bonding until such unsatisfactory condition is corrected. In general, deficiency in thickness shall be interpreted as anything in excess of 1/4 inch for the entire work or of 1/2 inch in isolated or limited areas. Deviations from straight edge laid parallel with the centerline, or from cross-section template, shall not be more than 1/16 inch per foot from point to point of contact. Deviations from grade shall not exceed .05 (five one hundredths) foot and in no case shall such deviation vary from one extreme to the other within less than 100 feet from low to high.

3.03 PRIMING

- A. Prime coat shall be applied only when the base meets specified density requirements and the moisture content in the top half of the base does not exceed 90 percent of the optimum moisture of the base material. At time of priming, base shall be firm, unyielding and in such condition that no undue distortion will occur.

3.04 MAINTAINING

- A. CONTRACTOR shall assure the true crown and template are maintained, with no rutting or other distortion, and the base meets all requirements at the time the surface course is applied.

3.05 CLEANING BASE AND PROTECTION OF ADJACENT WORK

- A. Before any bituminous material is applied, all loose material, dust, dirt, cakes clay and other foreign material which might prevent proper bonding with the existing surface, shall be removed for the full width of the application. Particular care shall be taken in cleaning the outer edges of the strip to be treated to insure the prime or tack coat will adhere.
- B. When the prime or tack coat is applied adjacent to curb and gutter, valley gutter or any other concrete surfaces, such concrete surfaces (except where they are to be covered with a bituminous wearing course) shall be covered with heavy paper or otherwise protected as approved by ENGINEER. Any bituminous material deposited on such concrete surfaces shall be removed.

3.06 WEATHER LIMITATION

- A. Prime and tack coats shall be applied when the air temperature, in the shade, is above 40EF, and when all other weather conditions and the condition of the surface are suitable.

3.07 APPLICATION OF PRIME COAT

- A. Rate of Application for Limerock, Limerock Stabilized, and Local Rock Bases: For these bases, rate of application shall be not less than 0.10 gallon per square yard, unless a lower rate is directed by ENGINEER.

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- B. Sprinkling: If so required by ENGINEER, base shall be lightly sprinkled with water and rolled with a traffic roller in advance of the application of the prime.
- C. Partial Width of Application: If warranted by traffic conditions, ENGINEER may request that the application be made on only one-half the width of the base at one time, in which case positive means shall be used to secure the correct amount of bituminous material at the joint.

3.08 APPLICATION OF TACK COAT

- A. General: Where a bituminous surface is to be laid and a tack coat is required, tack coat shall be applied as specified herein below.
- B. Where Required: In general, a tack coat will not be required on primed bases except in areas that have become excessively dirty and cannot be cleaned, or in areas where the prime has cured to the extent that it has lost all bonding effect. Generally, a tack coat will be required on hot bituminous base courses before placing the surface course.
- C. Method of Application: Tack coat shall be applied with a pressure distributor except that, on small jobs, if approved by ENGINEER, application may be by other mechanical devices or by hand methods. The bituminous material shall be heated to a suitable temperature as designated by the ENGINEER and shall be applied in a thin, uniform layer.
- D. Rate of Application: Rate of application shall be between 0.02 and 0.08 gallon per square yard. For tack coat applied on concrete pavement which is to be surfaced, the rate of application may exceed the upper limit, if directed by ENGINEER.
- E. Curing and time of Application: Tack coat shall be applied sufficiently in advance of the laying of the bituminous mix to permit drying, but shall not be applied so far in advance that it might lose its adhesiveness as a result of being covered with dust or other foreign material.
- F. Protection: Tack coat surface shall be kept free from traffic until the subsequent layer of bituminous hot mix has been laid.

3.09 QUALITY CONTROL

- A. OWNER shall select and pay the Engineering Testing Laboratory for required testing in work performed under this Section. Should retesting be required because of failure to pass, CONTRACTOR shall pay for additional testing required until specification requirements are attained. CONTRACTOR shall either promptly reimburse the OWNER for said costs or shall have the amount deducted from the next month's pay request and all subsequent pay requests. In such case the OWNER shall promptly pay the Engineering Laboratory for all testing costs. CONTRACTOR is herein required to schedule and make test arrangements with the Test Laboratory for making the required tests. Test patterns and frequency will

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be at the direction of the ENGINEER. Frequency of tests shown below shall be considered a minimum.

1. Subgrade - Bearing: One Limerock Bearing Value (LBR) test for each 0-5000 square yards of subgrade plus one test for each additional 5000 square yards or fraction thereof, plus one LBR for each change of material. One subgrade in place density for each 0-1000 square yards of base and one test for each additional 1000 square yards or fraction thereof.
2. Base Course: One Limerock Base Course in place density for each 0-1000 square yards of base plus one test for each additional 1000 square yards or fraction thereof (AASHTO T 180).

PART 4 MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

- A. Quantities to be paid for under this Section shall be the area, in square yards, of stabilized subgrade and crushed limerock base completed and accepted.
- B. In determining the area of base to be paid for, length to be used in the calculation shall be the actual length measured along the surface of the completed base. Width shall be the actual width of base constructed within lines shown on the Plans, not to exceed the width called for on the Plans.
- C. In determining the area of stabilized subgrade to be paid for, length to be used in the calculation shall be the actual length measured along the surface of the completed base. Width shall be actual width of stabilized subgrade that does not exceed the width called for on the Plans.

4.02 BASIS OF PAYMENT

- A. Payment shall be made on a unit price basis in accordance with the accepted Proposal. OWNER reserves the right to add or deduct from the Work. Such additions or deductions will be made at the unit prices established in the Proposal. Said additions or deductions shall not exceed twenty-five percent (25%) of the base bid of the successful BIDDER or BIDDERS without consideration of an adjustment in the unit price.
 1. Compacted Base: The quantity of base, determined as provided in Section 4.01 (B), shall be paid for at the contract unit price per square yard for this item. Such price and payment shall be full compensation for furnishing, hauling, spreading, compacting, and surface finishing the limerock material; furnishing and placing asphaltic prime coat materials on the road, removing same, if necessary, and incidental items shown on the Plans, all performed in a workmanlike manner in accordance with the Plans and Specifications. No separate payment shall be made for bituminous material, sand or earth applied as a curing agent.

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2. **Stabilized Subgrade:** The quantity of stabilized subgrade determined as provided in Section 4.01 (C), shall be paid for at the contract unit price per square yard for this item. Such price and payment shall be full compensation for furnishing, hauling, spreading, mixing, compacting, and finishing the subgrade material, and incidental items shown on the Plans, all performed in a workmanlike manner in accordance with the Plans and Specifications.

END OF SECTION 32 11 00

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SECTION 32 31 13 - CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Posts, rails, and frames.
- B. Wire fabric.
- C. Concrete.
- D. Manual gates with related hardware.
- E. Accessories.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Concrete anchorage for posts.

1.3 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
- C. ASTM A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric; 2011a (Reapproved 2022).
- D. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
- E. ASTM F567 - Standard Practice for Installation of Chain-Link Fence; 2014a (Reapproved 2019).
- F. ASTM F1043 - Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework; 2018 (Reapproved 2022).
- G. ASTM F1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures; 2018 (Reapproved 2022).

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- H. CLFMI CLF-FIG0111 - Field Inspection Guide; 2014.
- I. CLFMI CLF-PM0610 - Product Manual; 2017.
- J. CLFMI CLF-SFR0111 - Security Fencing Recommendations; 2014.
- K. CLFMI WLG 2445 - Wind Load Guide for the Selection of Line Post and Line Post Spacing; 2023.
- L. FS RR-F-191/1D - Fencing, Wire and Post Metal (Chain-Link Fence Fabric); 1990.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on fabric, posts, accessories, fittings and hardware.
- C. Design Calculations: For high wind load areas, provide calculations for fence fabric and accessory selection as well as line post spacing and foundation details. See CLFMI WLG 2445 for line post and spacing guidance.
- D. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components. See CLFMI CLF-SFR0111 for planning and design recommendations.
- E. Manufacturer's Qualification Statement.
- F. Fence Installer Qualification Statement.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Fence Installer: Company with demonstrated successful experience installing similar projects and products, with not less than five years of documented experience.

1.6 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.

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PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Chain Link Fences and Gates:
1. Master-Halco, Inc: www.masterhalco.com/#sle.
 2. Merchants Metals: www.merchantsmetals.com/#sle.
 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 COMPONENTS

- A. Line Posts: 1.9 inch diameter.
- B. Corner and Terminal Posts: 2.38 inch diameter.
- C. Fabric: 2 inch diamond mesh interwoven wire, 6 gauge, 0.1920 inch thick, top selvage knuckle end closed, bottom selvage knuckle end closed.
- D. Tension Wire: 6 gauge, 0.1920 inch thick steel, single strand.
- E. Tie Wire: Aluminum alloy steel wire.

2.3 MATERIALS

- A. Posts, Rails, and Frames:
1. ASTM A1011/A1011M, Designation SS; hot-rolled steel strip, cold formed to pipe configuration, longitudinally welded construction, minimum yield strength of 50 ksi; zinc coating complying with ASTM F1043 and ASTM F1083.
 2. Line Posts: Type I round in accordance with FS RR-F-191/1D.
 3. Terminal, Corner, Rail, Brace, and Gate Posts: Type I round in accordance with FS RR-F-191/1D.
- B. Wire Fabric:
1. ASTM A392 zinc coated steel chain link fabric.
 2. Comply with CLFMI CLF-PM0610.
- C. Concrete:
1. Type specified in Section 03 30 00.

2.4 MANUAL GATES AND RELATED HARDWARE

- A. Hardware for Double Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; drop bolt on inactive leaf engaging socket stop set in concrete,

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active leaf latched to inactive leaf preventing raising of drop bolt, padlock hasp; keepers to hold gate in fully open position.

- B. Hinges: Finished to match fence components.
 - 1. Brackets: Round.
 - 2. Mounting: Center.
 - 3. Closing: Manual.

2.5 ACCESSORIES

- A. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel.

2.6 FINISHES

- A. Components (Other than Fabric): Galvanized in accordance with ASTM A123/A123M, at 1.7 ounces per square foot.
- B. Hardware: Hot-dip galvanized to weight required by ASTM A153/A153M.
- C. Accessories: Same finish as framing.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Verify that areas are clear of obstructions or debris.

3.2 PREPARATION

- A. Removal: Obstructions or debris.

3.3 INSTALLATION

- A. Install framework, fabric, accessories and gates in accordance with ASTM F567.
- B. Place fabric on outside of posts and rails.
- C. Corner, Gate and Terminal Post Footing Depth Below Finish Grade: ASTM F567.
- D. Do not stretch fabric until concrete foundation has cured 28 days.
- E. Position bottom of fabric 2 inches above finished grade.
- F. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers.

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- G. Install bottom tension wire stretched taut between terminal posts.
- H. Peen all bolts upon installation.

3.4 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch.
- B. Maximum Offset From True Position: 1 inch.

3.5 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Layout: Verify that fence installation markings are accurate to design, paying attention to gate locations, underground utilities, and property lines.
- C. Gates: Inspect for level, plumb, and alignment.
- D. Workmanship: Verify neat installation free of defects. See CLFMI CLF-FIG0111 for field inspection guidance.

3.6 CLEANING

- A. Leave immediate work area neat at end of each work day.
- B. Clean jobsite of excess materials; scatter excess material from post hole excavations uniformly away from posts. Remove excess material if required.
- C. Clean fence with mild household detergent and clean water rinse well.
- D. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.

3.7 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.
- B. See Section 01 79 00 - Demonstration and Training, for additional requirements.
- C. Demonstrate proper operation of equipment to Owner's designated representative.

END OF SECTION 32 31 13



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April 26, 2024
ADDENDUM 18

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE EXTENSION: ~~APRIL 23~~, May 14, 2024, AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

1Q: What will be the recourse if the awarded General Contractor uses a subcontractors proposal and that subcontractor is not on the EDRA list vetted and monitored by City of North Port and awards this subcontractor a contract? This creates an advantage to that general contractor and is unfair to all other general contractors and subcontractors that have followed the EDRA rules.

Will the City of North Port require the awarded General Contractor to submit a list of all subcontractors that they will be awarding contracts? Will the City of North Port review and vet the list to ensure that the subcontractors have submitted the proper EDRA paperwork to obtain plans?

Once the deadline for EDRA Form Request Attachment 17 has passed will the City be issuing a current EDRA list with all plan holders? after May 3.

1A: The City establishes contractual agreements with the prime contractor, not subcontractors. It is the prime contractor's obligation to ensure that any subcontractors they engage have submitted the required EDRA form(s). Per the technical specifications, the awarded vendor is required to provide a list of subcontractors. An updated list of exempt plan holders will be released at the end of business day on May 3, 2024.

2Q: How do I go about getting an updated plan holder list of the contractors that requested plans via EDRA form?

2A: An updated exempt plan holders list will be released at the end of business day on, May 3, 2024.

ADDITIONAL INFORMATION:

A1: DELETE Attachment 5 in the original document and REPLACE with the Revised Attachment 5.

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

Keith Raney, CPPB, CPPO
Contract Administrator II
Finance Department/Purchasing Division
4970 City Hall Blvd.
North Port, Florida 34286
Tel: 941.429.7103
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E-mail: kraney@cityofnorthport.com

Receipt of Addendum No. 18 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.18

**REVISED - ATTACHMENT 5:
ADDENDA AND BOND INFORMATION**

The undersigned acknowledges receipt of the following addenda, and the cost, if any, of such revisions has been included in the bid price.

Addendum No.	1	Dated		Addendum No.	13	Dated	
Addendum No.	2	Dated		Addendum No.	14	Dated	
Addendum No.	3	Dated		Addendum No.	15	Dated	
Addendum No.	4	Dated		Addendum No.	16	Dated	
Addendum No.	5	Dated		Addendum No.	17	Dated	
Addendum No.	6	Dated		Addendum No.	18	Dated	
Addendum No.	7	Dated		Addendum No.		Dated	
Addendum No.	8	Dated		Addendum No.		Dated	
Addendum No.	9	Dated		Addendum No.		Dated	
Addendum No.	10	Dated		Addendum No.		Dated	
Addendum No.	11	Dated		Addendum No.		Dated	
Addendum No.	12	Dated		Addendum No.		Dated	

BID BOND AND PERFORMANCE/PAYMENT BOND (SEE ATTACHMENTS 18 & 19)

BID BOND: ACCOMPANYING THIS PROPOSAL IS _____
(insert: "cash", "Bidder's bond", or "certified check", as the case may be) in an amount equal to at least 5% of the total amount of the bid, payable to the City of North Port. Cashier's checks will be returned to all Bidders after award of bid. If supplying a bid bond please use the attached bid bond form. **Note: Failure to submit a bid bond will be cause for rejection of bid.**

The undersigned deposits the above-named security as a proposal guarantee and agrees that it shall be forfeited to the City as liquidated damages in case this proposal is accepted by the City and the undersigned fails to execute a Contract with the City as specified in the Contract documents accompanied by the required labor and material and faithful performance bonds with sureties satisfactory to the City, and accompanied by the required certificates of insurance coverage. Should the City be required to engage the services of an attorney in connection with the enforcement of this bid, Bidder promises to pay City's reasonable attorneys' fees incurred with or without suit.

The undersigned agrees, if awarded this bid, to furnish a **PERFORMANCE AND PAYMENT BOND** in the amount of 100% of the total project price within ten (10) calendar days after notification of award to the Purchasing Department. The undersigned shall be responsible and bear all costs associated to record Performance and Payment Bond with Sarasota County Clerk's Office. Receipt of said recording and a certified copy of the Bond shall be furnished to the Purchasing Division at the time of the pre-construction meeting.

All Contract documents (i.e.: performance and payment bond, cashier's check, bid bond) shall be in the name of "City of North Port".

Date: _____

Signed (Person authorized to bind the company): _____

Name (printed): _____ **Title:** _____

THIS PAGE MUST BE COMPLETED AND SUBMITTED



City of North Port
FINANCE DEPARTMENT/PURCHASING DIVISION
4970 CITY HALL BLVD, STE 337
NORTH PORT, FLORIDA 34287
Office: 941.429.7170
Fax: 941.429.7173
Email: purchasing@cityofnorthport.com



May 3, 2024
ADDENDUM 19

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE May 14, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

1Q: Can you provide a planholders list of the companies that are requesting the exempt plans?

1A: See Attachment issued with this Addendum

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

Keith Raney, CPPB, CPPO
Contract Administrator II
Finance Department/Purchasing Division
4970 City Hall Blvd.
North Port, Florida 34286
Tel: 941.429.7103
Fax: 941.429.7173
E-mail: kraney@cityofnorthport.com

Receipt of Addendum No. 19 shall be noted within the Bid Form in the appropriate section.

End of Addendum No.19



City of North Port
FINANCE DEPARTMENT/PURCHASING DIVISION
4970 CITY HALL BLVD, STE 337
NORTH PORT, FLORIDA 34287
Office: 941.429.7170
Fax: 941.429.7173
Email: purchasing@cityofnorthport.com



May 8, 2024
ADDENDUM 20

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE May 14, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

A Revision was made on the Exempt Plans List. See Attachment issued with this Addendum

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

Keith Raney, CPPB, CPPO
Contract Administrator II
Finance Department/Purchasing Division
4970 City Hall Blvd.
North Port, Florida 34286
Tel: 941.429.7103
Fax: 941.429.7173
E-mail: kraney@cityofnorthport.com

Receipt of Addendum No. 20 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.20

Contractor	Accepted Invitation
Seagate Development Group, LLC	X X is accept
Stellar Development Inc	X O is they h
DEC Contracting Group, Inc	X
Wharton Smith, Inc.	X
Alpa Omega Communications	X
Rycon Constuction	X
Advanced Cable Connections, Inc	X
APG Electric, Inc.	X
AGT Construction Services, Inc	X
HBS Drywall, LLC	X
Wiginton Corporation dba Wiginton Fire Systems	X
CTI Construction Testign & Inspection, Inc.	X
Quality Cabinets and Counters, Inc.	X
Construction Technology Group, Inc.	X
OFDC Commercial Interiors	X
Hanlon Acoustical Ceilings	X
Precision Service & Installation	X
Florida Service Painting dba Service Contracting Solutions	X
Redeye Doors Specialists	X
Southwest Concrete & Masonry Systems	X
Power Air Conditioning, Inc	X
DuraServ Corp DBA Action Automatic Door & Gate	X
Suncoast Commercial door and Hardware	X
Commercial Residential Aluminum and Fabrication	X
Arrow Exterminators dba Hughes Exterminators	X
East Coast Metal Structures	X
Steel Fabricators, LLC	X
S.E. Bates Electric Inc.	X
Ellis Van Pelt, Inc.	X
Nu Sons Electric	X
Five T Co	X
Suncoast Industries of Florida	X
Big River Roofing	X
Montgomery Cabinetry Company	X
Oaktree Consulting LLC dba Charlotte Plumbing	X
Commercial Fire and Communications, Inc.	X
Jansen & Sons InsulationLightning Fast roofing	X
Lightning Fast Roofing and Solar	X
Scrub Pros Cleaning LLC dba Clearsite Construction Services	X
Southeastern surfaces and Equipment	X
Cherry Woodworking Inc	X
Roman Roofing Inc	X
Southeast Speciality Products, Inc.	X
Manasota Flooring	X

Bolcor Commercial Flooring	X
Lee Drywall	X
Overhead Door	X
HRI AC and Gas Services	X
Associated Companies Inc dba Associated Electric	O
Florida Engineering & Surveying	X
South Coast Concrete	X
Advanced Masonry Associates	X
Tampa Amalagated Steel	X
TAW Power Systems dba Integrated Power Services	X
Dolphin Innovations, LLC	X
Fabricated Products of Tampa	X
ADG Power & Automation	X
Key Glass, Inc.	X
Parsons & Associates dba Overhead Door Company of Tampa Bay	X
Mahoney Concrete Systems	X
Intelligent Infrastructure Systems	X
Tri-Tech Mechanical	X
Builder Services Group dba West Coast Insulation	X
Eagle Roofing and Restoration	X
Souther Plains Roofing	X
Bonitz	O
T&T Construction Management	X
Stryker Electrical	X
Bluefin Mechanical	X
Johnson Controls	X
Above All Cauling and Waterproofing	X
Ackerman Plumbing Inc.	X
Tailored Foam of Florida	X
Steward Mellon Company	X
Pipe Rite Fire Sprinklers	X
Viking Construction Corp od SW Florida	X
Tiger Builders	X
ADT Commercial	X
Browning Chapman	X
French's Air Conditioning	X
Acousti Engineering Company	X
Ring Power Corporation	X
Landmark Services of Southwest FL	X
Cook & Board dba Specialized Architectural	X
Bell Architectural Specialites	X
Datatek	X
Spray Foam Genie	X
ProMedia	X
Crime Sheild	X
D L Porter Constructors	X
C4 Contractors Corp	X

Midwest Alarm Company dba BCI Integrated Solutions	X
Coast to Coast Fire Protection	X
Wallpaper World of SW FL	X
Suncoast Commercial Glass	X
Genset Services	X
United Mechanical	X
Floricrete LLC	X
24-7 Floors, LLC	X
Backbay Construction	X
AMS Floors	X
Tamiami Painting Inc	X
Spectra Contract Flooring	X
Steve Ward & Associates	X
Architectural Coatings Inc of Florida	X
Orb Roofing Solutions	X
EMI Construction	X
Fields Door & Hardware	X
Bay to Bay Stone Restorations	X
Ohana Et Al Corp dba AL Brothers	X
Stancel Concrete Inc.	X
Fire Safety	X
Assa Abloy Entrance Systems	X
Horizons Blinds and More	X
Acolite & Claude United Sign	X
Sunshine Project Management	X
Gulf Coast Signs of Sarasota	X
Paving a Creation dba Intrastate Terrazzo	O
Wade's Carpet & Interiors	O
Seco Holdings	X
Gulfshore Drywall	X
Hoff Enterprises, Inc	X
Leggett Roofing LLC	X
ATS Waypoint	X
Universal Window Solutions	X
Distinct Designs Custums	X
Bay to Bay Balancing, Inc	X
Breesee Woodwork Inc dba Elite Woodwork	X
Mullet's Aluminum Products, Inc.	X
Aristocrat Plumbing, Inc	X
Clarke Construction Group, Inc.	O
Diamond Drywall & Glass	X
SecurT Holdings, LLC	X
Total Air Solutions LLC	X
L.E.B.S Electric Inc	X
Patriotic Air Conditioning	X
Lynx Surveyor	X
Ristow Roofing LLC	X

Mardale Specialties Direct	X
Taylor Lightning Protection	X
Pacifica Engineering Services	O
Wayne Wiles Floorcoverings, Inc	O
Bello & Bello Land Surveying	O
Universal Glass Inc dba Heritage Glass	X
Hypower LLC	X
Steadyflow Plumbing	X
Consolidated Architectural Systems	X
Nawkaw Corp	O
Central Roofing of Fl	X
Marant Construction	X
Gulf Coast Ceilings Systems	X
Jansen & Son Insulation	X
Topps Fence, Inc	X
Just Steel Inc	X
Curb Systems of Southwest Florida	X
CFS Roofing	X
Crowther Roofing	X
Atlantic Southern Paving & Seal Coating	
RCX Tilt Up Construction Inc	X
Florida Floors SW	

SENT IN BUT NEEDED EDRA FORMS FIXED EMAILED

	Date reached out to be fixed
On The Mark Spray Foam Insulation	No bid
Naaman & Davidson Surveying	3/20/2024
R. Simpson Plastering and Stucco	No Bid
Pristine Post Construction Cleaning	3/20/2024
Franklins Plumbing LLC	No Bid
Deme Construction	3/19/2024 Just wanted Civil
Jansen Shutters & Specialities	3/15/2024 no response
Quality Cleaning Service	3/15/2024 emailed twice
SGA Management	3/15/2024 emailed twice
Breezee Door Installations	3/27/2024 4/4/2024
Center State	3/27/2024 4/4/2024
Specified Architectural Systems	3/27/2024 4/4/2024 No bid
Rams Roofing	3/27/2024 4/4/2024
Door and Hardware Openings	3/22/2024 4/4/2024
USF West Coast Insulation	3/26/2024
Advanced Control Corporation	3/27/2024 4/4/2024
Impact Fire Service	3/28/2024 4/4/2024 no bid
AP Contracting LCC	3/28/2024 4/4/2024
Identiy Group	3/28/2024 4/4/2024
Schiller	3/28/2024 4/4/2024
Kingspan Insulated panels	3/29/2024 4/4/2024 No bid
Midwest Alarm Company	4/16/2024 4/16/2024
A to Z Decorative Concrete	4/4/2024 4/25/2024

Hansen Roofing Services	4/19/2024	4/25/2024
Smith Industries	4/19/2024	No Bid
Terra Stoneworks	3/15/2024	4/25/2024 Bid schedule
Windows solutions Group	4/12/2024	4/25/2024
Porter Roofing Contractors	4/11/2024	4/25/2024
BOS of Florida	4/9/2024	4/25/2024
CMM Roofing	4/9/2024	4/25/2024 asked for bid form
Paramount Metal Systems	4/4/2024	4/25/2024

	Email Address	Exempt Plans originally received	Exempt Pla
ed	mprice@seagatedevelopmentgroup.com	All	X
ave not	maurice@stellargc.com	All	
	erika@decontracting.com	All	X
	jsilling@whartonsmith.com	All	
	tom@aoc3.com	C,D,E	X
	mmastro@ryconinc.com	All	
	ctitus@accicable.com	D	X
	tony.liga@apg.company.com	C,D,E	X
	matt@agtbuilders.com	C	X
	jmaxey@hbsdrywall.com	C & I	X
	bcb@wiginton.net	E,C,D,I	X
	jherrara@ctilabs.net	F & I	X
	anthonyQCC@gmail.com	C	
	fl@ctg-inc.com	All	X
	accounting@ofdc-inc.com	All	
	mat.wright@hanlonceilings.com	All	
	sales@psicrew.com	C	X
	jeffs@servicecontracting.com	All	X
	debbybrunath@yahoo.com	All	
	bethany.swcm@gmail.com	All	X
	bobc@powerairconditioning.com	All	
	jess.senn@duraservcorp.com	All	X
	dan@suncoastdoor.com	All	
	adonato@craluminum.com	All	X
	tkrawiec@starexterminators.com	All	
	whitney@eastcoastmetals.net	All	X
	ctsoutsouris@sfab.com	All	
	jasonb@bates-electric.com	C,D,E,F,G	X
	evpinc@aol.com	All	X
	Isaac@nusonelectric.com	All	no bid
	parketucker@5tco.com	All	X
	brad@suncoastindustries.net	All	X
	eric@bigriverroofing.com	All	
	prm@montgomerycabinetry.com	C	
	james@charlotte.plumbing	All	
	tyler.corbett@cfcsystems.com	All	X
	ted.garry@truteam.com	All	
	carlos_hiller8@hotmail.com	All	
	andrew.miller@clearsiteconstruction.com	All	
	mblanchard@sseteam.com	All	
	tony.cherrywoodworking@gmail.com	All	
	eddie@romanroofinginc.com	All	
	sespecproducts@earthlink.net	C,G,I	
	skleine@manasotaonline.com	All	

mathewp@bolcor.com	All	
pe@leedrywall.com	All	X
tracy@ohsarasota.com	All	
mike@hrinaples.com	H,I	X
jason.varner@associatedelectric.com	All	
boots@florida-eas.com	All	
rmccone@southcoastconc.com	All	X
ron@advmasonry.com	All	
john@tascoonline.com	All	X
john.stlouis@ips.us	All	
john@dolphininnovations.com	All	
jeff@fabricatedprod.com	All	X
amier.habayeb@adgpwr.com	C,D	
derekwhetsel@keyglass.com	All	
josh@overheadtampa.com	C	
jeremy@mahoneyconcrete.net	All	X
stherrien@i2solutionsllc.com	C,D,E,G	X
jason@tri-techmechanical.com	All	
shoehn@usiinc.com	All	
gregg@eaglerr.net	C,D,E,F,G,I	
bobtspp@outlook.com	All	X
peteflores@bonitz.com	All	
shiv.chudasama@ttcon.com	All	X
m.meyer@stryker-electric.com	All	X
kdeshields@bluefinmech.com	C,D,G,H,I	
stephen.harbuck@jci.com	D,E,G	X
jimk@aboveallcaulk.com	All	
eric@ackermanplumbinginc.com	All	X
estimates@tailoredfoaminc.com	C,I	
catalinan@stewardmellon.com	C,I	No Bid
jwlucas@verizon.net	E	
jason@vikingfl.com	C	X
mminotti@tigerbuildersinc.com	C	X
sullivandaniel@adt.com	C,D,E,F,G	X
bfields@browningchapman.com	C	
asheely@frenchac.com	All	
shawnkammerer@acousti.com	All	
allyson.keeny@ringpower.com	All	X
M.Bowman@landmarksvcs.com	C,I	X
mwinborn@specilizedap.com	C	
dabell2355@gmail.com	All	X
chip@datatekav.com	C,D,G	X
timothy.fuller@sprayfoamgenie.com	C,D,F,G,I	
tony.tregillus@thepromediagroup.com	D	X
crimeshieldsfs@gmail.com	All	
kim@dlporter.com	All	
elvys@c4con.net	All	

ithompson@bcifl.net	All	X
kaitlyn@ccfpfl.com	All	X
scott.wallpaperworld@gmail.com	All	X
jrichards@suncoastgw.com	All	
storstade@gensetservices.com	1D	X
dpine@umihvac.com	All	X
wallyB@Floricrete.com	1C,1G, 1I	
Scott@floors4pros.com	All	X
mike@backbayconstruction.com	All	
peter@amsfloors.com	1C	X
tamiami.painting@icloud.com	All	
jj.gruden@spectracf.com	All	X
jennifer@swainc.com	1C	
joe@archcoatings.com	All	
christina@orb.solutions	All	X
magdiel@emiconstructioninc.com	1C, 1I	
dfields@fdhinc.net	1C	
jr@btbsr.com	1C	X
tdexter@albrothers.com	1C	
chad@stancelconcrete.com	1C 1I	
estimating@firesafety-inc.com	1C & 1I	
ted.blake@assaabloy.com	1C & 1I	
horizonms.planner@gmail.com	1C & 1I	X
andrew@acusigns.com	1C	X
samf@seu-usa.com	1c&1I	
h.kutat@gulfcoastsigns.com	1C-1I	X
kip@iterrazzo.com	All	
tim@wadesinteriors.com	All	
Steve@secosouth.com	All	
Caleb@gulfshoredrywall.com	All	X
ken@heiflorida.com	All	
tony@leggettroofing.com	All	X
jansenf@atswaypoint.com	All	X
george@uws.solutions	All	X
billk@distinctdesignsfl.com	All	
bids@bay2bay.net	G	X
marcbresee@gmail.com	All	
Brent@mulletsaluminum.com	All	
Harry@aristocratplumbing.com	1C, !G, !I	X
office@clarkecg.com	All	
mark@diamondglass.net	All	
Garry@CIAaccess.com	C	
jbergen@totalairfl.com	All	X
ar@leselectric.com	All	X
PatrioticAir@gmail.com	All	
dsantana@lynxsurveyors.com	All	
bob@ristowbuilds.com	All	X

mccoper@specialitiesdirect.com	All	X
rich.franklin@vfcgroup.com	All	X
wesleyfoster@pacifices.com	All	
tsiemers@waynewiles.com	1C	
Odalys@belloland.com	All	
Brianh@heritageglassinc.com	All	X
rkelleher@hypowerinc.com	All	X
steadyflowplgb@gmail.com	1C, 1H, 1I	
frey@ca-syst.com	All	X
michael.montgomery@nawkaw.com	1C	
florian@centralroofingllc.net	All	X
davidariza@marantllc.com	1c & 1I	X
wade@gulfcoastceilings.com	1C& 1I	
ronald.obuch@truteam.com	All	X
Kevintopp@toppsfenceinc.com	revised	X
frankorduno@juststeel.net	All	X
Tony@curbsystems.net	Revised	X
bids@cfsroofing.com	Revised	X
adamb@crowther.net	Revised	X
billy@atlanticsouthernpaving.com	All	X
roger@rcxtiltupconstruction.com	1C,1D,1E,1F,1I	X
Ali@floridafloorssw.com	revised	

ans received via addendum



City of North Port
FINANCE DEPARTMENT/PURCHASING DIVISION
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May 8, 2024
ADDENDUM 21

TO: PROSPECTIVE BIDDERS

RE: RFP NO. 2024-15 North Port Utilities Administration Building

DUE DATE May 14, 2024 AT 2:00 P.M.

Bidders are hereby notified that this addendum shall be made part of the above-named bid and contract documents. The following changes to the above bid are issued to modify, and/or clarify the bid and contract documents (the deletions are as ~~striketroughs~~ and additions as underlined). These items shall have the same force and effect as the original documents, and bids to be submitted on the specified date shall conform with the additions, deletions and revisions as listed herein.

Q: Details for the 23 concrete light pole bases per 5/EA301 requires important information so to accurately price this work since the detail refers to data on the structural and site drawings that does not exist.

A: **FPL application number is 13216370.**

Firms are required to acknowledge receipt of this addendum on their proposal forms. All other terms and conditions of the original proposal and contract documents remain the same.

Keith Raney

Keith Raney, CPPB, CPPO
Contract Administrator II
Finance Department/Purchasing Division
4970 City Hall Blvd.
North Port, Florida 34286
Tel: 941.429.7103
Fax: 941.429.7173
E-mail: kraney@cityofnorthport.com

Receipt of Addendum No. 21 shall be noted within the Bid Form in the appropriate section.
End of Addendum No.21