



CITY OF VENICE, FLORIDA

Purchasing Department

**401 W. Venice Avenue
Venice, FL 34285**

Invitation to Bid

ITB Number 3025-16

Date of Issue: February 20, 2016

Submission Deadline: March 24, 2016

at 2:00 PM

Title and Purpose of ITB:

RO WTP High Service Pump Replacement

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**CITY OF VENICE
RO WTP HIGH SERVICE PUMP REPLACEMENT**

TABLE OF CONTENTS

BIDDING AND CONTRACTING REQUIREMENTS

<u>SECTION</u>	<u>DESCRIPTION</u>	<u>PAGE NO.</u>
<u>DIVISION 0 – BIDDING AND CONTRACTING REQUIREMENTS</u>		
00 01 07	Seals and Certifications Page.....	00 01 07 -1
00 11 13	Invitation to Bid	00 11 13 -1
00 21 13	Instructions to Bidders	00 21 13 -1
00 41 13	Bid Form	00 41 13 -1
	Sample Contract	
	Payment Bond Form	
	Performance Bond Form	
	Contractor’s Release of Lien	
	Certificate of Substantial Completion	
00 45 13	Bidder Qualification Statement.....	00 45 13 -1
00 72 13	General Conditions of the Construction Contract.....	00 72 13 -1
00 73 01	Supplementary Conditions.....	00 73 01 -1
<u>DIVISION 1 - GENERAL REQUIREMENTS</u>		
01 11 13	Summary of Work	01 11 13 -1
01 14 16	Coordination with Owner’s Operations	01 14 16 -1
01 22 13	Measurement and Payment	01 22 13 -1
01 25 00	Substitution Procedures	01 25 00 -1
01 29 73	Schedule of Values	01 29 73 -1
01 31 13	Project Coordination	01 31 13 -1
01 31 19	Pre-Construction Conference	01 31 19 -1
01 32 16	Progress Schedule	01 32 16 -1
01 33 00	Submittal Procedures	01 33 00 -1
01 57 05	Temporary Controls	01 57 05 -1
01 65 00	Product Delivery Requirements	01 65 00 -1
01 66 00	Product Storage and Handling Requirements	01 66 00 -1
01 75 11	Checkout and Startup Procedures	01 75 11 -1
01 77 19	Closeout Requirements	01 77 19 -1
01 78 23	Operations and Maintenance Data	01 78 23 -1
01 78 39	Project Record Documents	01 78 39 -1
01 78 43	Spare Parts and Extra Materials	01 78 43 -1
01 79 23	Instruction of Operations and Maintenance Personnel	01 79 23 -1

**CITY OF VENICE
RO WTP HIGH SERVICE PUMP REPLACEMENT**

TABLE OF CONTENTS (Continued)

BIDDING AND CONTRACTING REQUIREMENTS

DIVISION 9 – FINISHES

09 91 00	Painting	09 91 00 -1
----------	----------------	-------------

DIVISION 26 - ELECTRICAL

26 05 05	General Provisions for Electrical Systems.....	26 05 05 -1
26 05 19	Low-Voltage Electrical Power Conductors and Cables.....	26 05 19 -1
26 05 29	Hangers and Supports for Electrical Systems	26 05 29 -1
26 05 33.13	Rigid Conduits	26 05 33.13 -1
26 05 33.16	Flexible Conduits	26 05 33.16 -1
26 05 53	Identification for Electrical Systems.....	26 05 53 -1
26 28 16.33	Disconnect Switches	26 28 16.33 -1

DIVISION 40 – PROCESS INTEGRATION

40 05 05	Exposed Piping Installation	40 05 05 -1
40 05 19	Ductile Iron Process Pipe.....	40 05 19 -1
40 05 93	Common Motor Requirements for Process Equipment.....	40 05 93 -1
40 60 05	Instrumentation and Control for Process Systems	40 60 05 -1

DIVISION 43 – PROCESS GAS-LIQUID HANDLING-PURIFICATION-STORAGE
EQUIPMENT

43 21 13.33	Centrifugal Vertical Lineshaft Pumps	43 21 13.33 -1
-------------	--	----------------

+ + END OF TABLE OF CONTENTS + +

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INVITATION TO BID

The City of Venice invites sealed bids from qualified bidders to provide the following goods or services, which is described in detail in the Specifications.

Bid No.: 3025-16

Bid Title: RO WTP High Service Pump Replacement

PROJECT DESCRIPTION: The replacement of three existing high service pumps, associated piping valves and appurtenances; replacement of silent check valves with new swing check valves; replacement of associated ARV's, pressure switches/gauges and appurtenances; and; disassembly of the surge anticipator valve and convert to a pressure relief/surge anticipator valve.

BID OPENING LOCATION: City of Venice, Venice City
Hall, Community Hall, room # 114, 401 West Venice Ave.,
Venice FL 34285

BID SUBMITTAL DEADLINE and BID OPENING DATE & TIME: March 24, 2016
at 2:00 PM

PRE-BID MEETING: YES **DATE & TIME:** March 3, 2016 at 2:00 PM

LOCATION: City of Venice Reverse Osmosis Water Treatment Plant

**Plant, Building "C" Break Room, 200 North Warfield Ave.,
Venice FL 34285**

Specifications and Bid documents are available by calling Onvia DemandStar at (800) 711-1712 or by their Internet address at <http://www.demandstar.com>. Proposers may also pick up Bid documents at the City of Venice Procurement- Finance Department, Room 204, 401 West Venice Ave., Venice Florida 34285, (941) 882-7422 at no charge.

A non-mandatory pre-bid meeting/site visit will be held on March 3, 2016 at 2:00 p.m., City of Venice Reverse Osmosis Water Treatment Plant, Building "C" Break Room, 200 North Warfield Ave., Venice FL 34285. Representatives from the City will be present to discuss the overall project and the Invitation to Bid. **Interested Firms are encouraged to attend.**

All questions, comments, or concerns about this ITB must be submitted in writing to Mr. Peter Boers, Procurement- Finance Department, for the City of Venice, Room 204, 401 West Venice Avenue, Venice, FL 34285 or e-mail at pboers@venicegov.com. Mr. Boers is the only designated representative of the City authorized to respond to comments, questions, and concerns. The City will not respond to comments, questions or concerns addressed to any

person other than Mr. Boers. If the City determines that a particular comment, question or concern necessitates a global response to all Proposers, the City will issue a clarifying memorandum or addendum. **The final day that the City will accept questions will be March 11, 2016 by 1:00 p.m.**

Bids must be submitted in **four sets** and at least one set must bear an original signature, in a sealed envelope marked **“Invitation to Bid # 3025-16: “RO WTP High Service Pump Replacement”** and mailed or delivered to the City of Venice- Purchasing Department, 401 W. Venice Ave. Room # 204, Venice, FL 34285, no later than the deadline specified. The City assumes no responsibility for bids received after the bid submittal time or at any location other than that specified, no matter what the reason. Late bids will be held unopened and will not be considered for award.

No bid will be received after the specified time for acceptance and no bidder may withdraw his bid within a period of ninety (90) days after the actual date of opening thereof.

Bids will be considered only from bidders who have the applicable license, if a license is required by the City of Venice and/or State of Florida, for the type of work specified. A copy of the applicable license must be submitted with bid if a license is required.

The City reserves the right to reject any or all bids in whole or in part, with or without cause, to waive any requirements, irregularities or technical defects therein, when it is deemed to be in the interest of the City.

CITY OF VENICE, FLORIDA

Publish: February 20, 2016
February 24, 2016

City of Venice Utilities Department
City of Venice, Florida

RO WTP High Service Pump Replacement

INSTRUCTIONS TO BIDDERS

TABLE OF ARTICLES

- | | |
|--|--|
| 1. Defined Terms | 31. Indemnification/Hold Harmless |
| 2. Bids Received | 32. Public Entity Crimes/Non-Collusive Affidavit |
| 3. Location and Description of Project | 33. Gratuities and Kickbacks |
| 4. Copies of Bidding Documents | 34. Equal Employment Opportunity |
| 5. Qualifications of Bidders | 35. Conflict of Interest |
| 6. Examination of Bidding Documents, Other Related Data and Site | 36. Drug Free Workplace |
| 7. Pre-Bid Meeting | 37. Applicable Laws |
| 8. Site and Other Areas | 38. Disclosure – Public Officer, Public Employee or Advisory Board Member of Owner |
| 9. Interpretations and Addenda | 39. Bid Protests |
| 10. Bid Security | 40. Scrutinized Companies |
| 11. Contract Times | |
| 12. Liquidated and Special Damages | |
| 13. Substitute and "Or Equal" Items | |
| 14. Subcontractors, Suppliers and Others | |
| 15. Preparation of Bid | |
| 16. Basis of Bids; Comparison of Bids | |
| 17. Submittal of Bid | |
| 18. Modification or Withdrawal of Bid | |
| 19. Opening of Bids | |
| 20. Disqualification of Bidders | |
| 21. Bids to Remain Subject to Acceptance | |
| 22. Evaluation of Bids and Award of Contract | |
| 23. Contract Securities | |
| 24. Contractor's Insurance | |
| 25. Signing of Agreement | |
| 26. Notice to Proceed | |
| 27. Partnering | |
| 28. Sales and Use Taxes | |
| 29. Local Preference | |
| 30. Public Records/Tabulation | |

ARTICLE 1 – DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof.
- A. Issuing Office: The office from which the Bidding Documents are to be issued and here the bidding procedures are to be administered.

ARTICLE 2 – BIDS RECEIVED

- 2.01 Refer to the Invitation To Bid for information on receipt of Bids.

ARTICLE 3 – LOCATION AND DESCRIPTION OF PROJECT

- 3.01 Refer to Section 01 11 13, Summary of Work, in the General Requirements for the location and description of the Project.

ARTICLE 4 – COPIES OF BIDDING DOCUMENTS

- 4.01 Refer to the Invitation To Bid for information on location where Bidders may examine and obtain the Bidding Documents.
- 4.02 (Not Used)
- 4.03 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 4.04 Owner and Engineer in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not grant permission for any other use.
- 4.05 Bidders who obtain solicitation documents from sources other than the Owner or download from <http://www.demandstar.com/> must officially register receipt of the solicitation with the City's Procurement – Finance Department in order to be placed on the notification list for any forthcoming addendum or other official communications. Failure to register as a prospective Bidder may cause your submittal to be rejected as non-responsive if you have submitted a response without acknowledgment of issued addenda. The Owner is not responsible for the accuracy of bid documents and information obtained from any source other than <http://www.demandstar.com/>.

ARTICLE 5 – QUALIFICATIONS OF BIDDERS

- 5.01 Bidders shall be experienced in the kind of Work to be performed, shall have the necessary equipment therefor, and shall possess sufficient capital to properly execute the Work within the time allowed. Bids received from Bidders who have previously failed to complete work within the time required, or who have previously performed similar work in an unsatisfactory manner, may be rejected. A Bid may be rejected if Bidder cannot show that Bidder has the necessary ability, plant, and equipment to commence the Work at the time prescribed and thereafter to prosecute and complete the Work at the rate or within the times specified. A Bid may be rejected if Bidder is already obligated for the performance of other work which would delay the commencement, prosecution or completion of the Work.
- 5.02 To demonstrate qualifications to perform the Work, Bidder shall submit within 5 days after Bid opening, upon Owner's request, a separate Bidder Qualifications Statement that will be furnished by OWNER. An example of the Bidder Qualifications Statement is bound in the Project Manual.
- 5.03 Bidders shall be qualified to do business in the state where the Project is located or covenant to obtain such qualification prior to signing the Agreement.
- 5.04 Bids will be received only from contractors licensed or registered by the State of Florida.

ARTICLE 6 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

- 6.01 Subsurface and Physical Conditions
- A. The Supplementary Conditions identify:
1. Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that have been utilized by Engineer in preparation of the Bidding Documents.
 2. Those drawings of physical conditions relating to existing surface or subsurface structures (except Underground Facilities) which are at or contiguous to the Site, that have been utilized by Engineer in preparation of the Bidding Documents.
- B. Electronic copies of the reports and drawings referenced in Paragraph 6.01.A above will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions, has been identified and established in Paragraph SC-4.02 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion drawn from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

6.02 Underground Facilities - Physical Conditions

- A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

6.03 Hazardous Environmental Condition

- A. Owner has no actual knowledge of a Hazardous Environmental Condition at the Site.

6.04 Provisions concerning responsibilities for the adequacy of data, furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unforeseen subsurface or physical conditions appear in Paragraphs 4.02, 4.03 and 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work appear in Paragraph 4.06 of the General Conditions.

6.05 Other Related Data (Not Used)

6.06 On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a Bid. Bidder shall fill all holes and clean up and restore the Site to its original conditions upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all Laws and Regulations relative to such explorations, investigations, tests, and studies.

6.07 A single Site visit has been scheduled following the pre-bid conference. No other Site visits will be allowed without Owner's approval.

6.08 (Not Used)

6.09 (Not Used)

6.10 It is the responsibility of Bidder, before submitting a Bid to:

- A. examine and carefully study the Bidding Documents, the other related data identified in the Bidding Documents and Addenda (if any);
- B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

- C. become familiar with and satisfy Bidder as to the Laws and Regulations that may affect cost, progress and performance of the Work;
- D. carefully study all:
 - 1. reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in the Supplementary Conditions in Paragraph SC-4.02 as containing reliable “technical data”, and
 - 2. reports and drawings of Hazardous Environmental Condition identified at the Site, if any, that have been identified in the Supplementary Conditions in Paragraph SC-4.06 as containing reliable “technical data”;
- E. consider the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in Bidding Documents with respect to the effect of such information, observation, and documents on
 - 1. the cost, progress and performance of the Work;
 - 2. the means, methods, techniques, sequences and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences and procedures of construction expressly required by the Bidding Documents; and
 - 3. Bidder’s safety precautions and programs;
- F. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for the performance of the Work at the price(s) bid and within the times required and in accordance with the other terms and conditions of the Bidding Documents;
- G. become aware of the general nature of work (if any) to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- H. promptly give Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and
- I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

6.11 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 6, that without exception the Bid is premised upon performing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, or procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing the Work.

ARTICLE 7 – PRE-BID MEETING

7.01 A non-mandatory Pre-Bid Meeting will be held at the date and time indicated in the Invitation To Bid. Representatives of the Owner and Engineer will be present to discuss the Project. Owner will transmit to all prospective Bidders of record such Addenda as Owner considers necessary in response to questions raised at the pre-Bid conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 8 – SITE AND OTHER AREAS

8.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment, to be incorporated into the Work are to be obtained and paid for by Contractor.

ARTICLE 9 – INTERPRETATIONS AND ADDENDA

9.01 All questions about the meaning or intent of the Bidding Documents shall be submitted to Owner in writing. To receive consideration, questions must be received by Owner by the date indicated in the Invitation To Bid. Interpretations or clarifications considered necessary by Owner in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Owner as having received the Bidding Documents for receipt not later than three days prior to the date for the opening of Bids. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

9.02 Addenda may also be issued to clarify, correct or change the Bidding Documents as deemed advisable by Owner or Engineer. Such Addenda, if any, will be issued in the manner and within the time period stated in Paragraph 9.01 of these Instructions to Bidders.

ARTICLE 10 – BID SECURITY

- 10.01 A Bid shall be accompanied by Bid security made payable to Owner in the amount of 5% of Bidder's maximum Bid price and in the form of Bid bond.
- 10.02 Bid bond shall be on the form bound in the Project Manual. Bid bond shall be issued by a surety complying with the requirements of Paragraphs 5.01 and 5.02 of the General Conditions.
- 10.03 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security, and complied with the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to sign and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may annul the Notice of Award and may retain from the Bid security an amount equal to the damages which Owner may suffer by reason of such failure. Said damages shall be the difference between that Bidder's Bid and the Bid of the next lowest, responsible and responsive Bidder, but such amount shall not exceed the Bid security amount, and, if there is no such next lowest, responsible and responsive Bidder, then the Bid security amount of that Bidder will be forfeited to the Owner as liquidated damages for such failure.
- 10.04 The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of the seventh day after the Effective Date of the Agreement or the ninety-first day after the Bid opening whereupon the Bid security furnished by such Bidders will be returned. The Bid security of Bidders whom Owner believes do not have a reasonable chance of receiving an award will be returned within seven days of the Bid opening.

ARTICLE 11 – CONTRACT TIMES

- 11.01 The number of days within which Work is to be completed and ready for final payment (the Contract Times) are set forth in the Agreement.

ARTICLE 12 – LIQUIDATED AND SPECIAL DAMAGES

- 12.01 Provisions for liquidated and special damages, if any, are set forth in the Agreement.

ARTICLE 13 – SUBSTITUTE AND “OR EQUAL” ITEMS

- 13.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or “or-equal” items. Whenever it is specified or described in the Bidding Documents that a substitute or “or-equal” item of material or equipment may be furnished or used by Contractor if accepted by Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement. The procedure for submittal of any such application by Contractor and consideration by Engineer is set forth in the General Conditions which may be supplemented in the General Requirements.

13.02 Refer to Section 01 25 00, Substitution Procedures, of the General Requirements for the period of time after the Effective Date of the Agreement during which the Engineer will accept applications for substitute items of material or equipment.

ARTICLE 14 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

14.01 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening submit to Owner a list of all such Subcontractors, Suppliers, other individuals, and entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualifications for each such Subcontractor, Supplier, individual, and entity if requested by Owner. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request the apparent Successful Bidder to submit an acceptable substitute without an increase in the Bid price.

14.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers and other individuals or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.06 of the General Conditions.

14.03 (Not Used)

14.04 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 15 – PREPARATION OF BID

15.01 A Bid shall be made on the Bid Form bound in the Project Manual. The Bid Form shall not be separated from the Project Manual nor shall the Bid Form be altered in any way.

15.02 All blanks in the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each Bid item listed therein. In the case of optional alternatives the words “No Bid”, “No Change”, or “Not Applicable” may be entered. Ditto marks shall not be used.

15.03 A Bid shall be executed as stated below.

- A. A Bid by an individual shall indicate the Bidder's name and official address.
 - B. A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title shall appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be indicated.
 - C. A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be indicated.
 - D. A Bid by a corporation shall be executed in the corporate name by an officer of the corporation and shall be accompanied by a certified copy of a resolution of the board of directors authorizing the person signing the Bid to do so on behalf of the corporation. The corporate seal shall be affixed and attested by the secretary or an assistant secretary of the corporation. The state of incorporation and the official corporate address shall be indicated.
 - E. A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be indicated below the signature.
 - F. All names shall be printed in ink below the signature.
 - G. If applicable, the Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located.
 - H. Contractor's license or registration number, if any, shall be entered in the space provided on the Bid Form.
- 15.04 The Bid shall contain an acknowledgment of the receipt of all Addenda, the numbers of which shall be filled in at the space provided on the Bid Form.
- 15.05 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be indicated.
- 15.06 In addition to the Bid Form, the forms listed in the Required Forms List, which are bound in the Project Manual, shall be submitted with the Bid. Each document shall be executed in the manner described in Paragraph 15.03 unless another manner is indicated.

ARTICLE 16 – BASIS OF BIDS; COMPARISON OF BIDS

16.01 Base Bid with Alternatives

- A. Bidder shall submit its Bid on the basis of a lump sum for the Base Bid and shall provide a separate Bid price for each additive alternative described in the Bidding Documents and as provided for on the Bid Form.

- B. For determination of the apparent low Bidder, Bids will be compared on the basis of the aggregate amount of the Base Bid, plus the additive alternative Bid prices providing the most features of the Work within the funds determined by the Owner to be available before Bids are opened. If the addition of another alternative Bid price in the listed order of priority would make the aggregate amount exceed such available funds for all Bidders, it will be skipped and the next subsequent alternative Bid price in a lower amount will be added if award thereon can be made within such funds.
- C. After the determination of the apparent low Bidder as stated, award in the best interest of the Owner may be made to said Bidder on its Base Bid and any combination of its additive alternative Bids for which Owner determines funds will be available at the time of award, provided that the award on any such combination of Base Bid and additive alternative Bids does not exceed the amount offered by any other Bidder for the same combination.

16.02 (Not Used)

16.03 Discrepancies between words and numerals will be resolved in favor of words. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

16.04 (Not Used)

ARTICLE 17 – SUBMITTAL OF BID

17.01 A Bid shall be received no later than the date and time prescribed and at the place indicated in the Invitation To Bid.

17.02 Bid shall be enclosed in an opaque sealed envelope plainly marked on the outside with the Project title, solicitation number, the name and address of the Bidder, and its license or registration number, if applicable. Bid shall be accompanied by Bid security and other required documents.

17.03 If the Bid is sent by mail or other delivery method, the sealed envelope containing the Bid shall be enclosed in a separate envelope plainly marked on the outside with the notation **“Invitation to Bid # 3025-16: “RO WTP High Service Pump Replacement”**. A mailed Bid shall be addressed to:

*Procurement – Finance Department
City of Venice – Procurement
401 West Venice Ave., Room #204
Venice, FL, 34285*

ARTICLE 18 – MODIFICATION OR WITHDRAWAL OF BID

18.01 Withdrawal Prior to Bid Opening:

- A. A Bid may be withdrawn by an appropriate document duly executed, in the manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time fixed for the opening of Bids. Upon receipt of such written notice, the unopened Bid will be returned to the Bidder.

18.02 Modification Prior to Bid Opening:

- A. If a Bidder wishes to modify its Bid, Bidder must withdraw its initial Bid in the manner specified in Paragraph 18.01.A of these Instructions to Bidders and submit a new Bid.

18.03 Withdrawal After Bid Opening

- A. After expiration of the period for receiving Bids, no Bid may be withdrawn or modified.

ARTICLE 19 – OPENING OF BIDS

19.01 Bids will be opened at the time and place where Bids are to be submitted and, unless obviously non-responsive, read aloud publicly. An abstract of the Bids will be made available to Bidders after the opening.

19.02 Bids received by mail or otherwise after the date and time specified for the opening of Bids will not be accepted. It will be the Bidder's responsibility to make arrangements for the return of their submittal at their expense.

ARTICLE 20 – DISQUALIFICATION OF BIDDERS

20.01 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

ARTICLE 21 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

21.01 All Bids shall remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of that period.

ARTICLE 22 – EVALUATION OF BIDS AND AWARD OF CONTRACT

22.01 Owner reserves the right to reject any or all Bids, including without limitation the right to reject any or all nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to be not responsible. Owner also reserves the right to waive any informality not involving price, time or changes in the Work.

- 22.02 Owner reserves the right to reject any Bid not accompanied by specified documentation and Bid security.
- 22.03 Owner reserves the right to reject any Bid that, in its sole discretion, is considered to be unbalanced or unreasonable as to the amount bid for any lump sum or unit price item.
- 22.04 In evaluating Bidders, Owner will consider the qualifications of Bidders, whether or not their Bids comply with the prescribed requirements, the alternatives, if any, the lump sum and unit prices, and other data as may be requested in the Bid Form or prior to the Notice of Award.
- 22.05 Owner may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.
- 22.06 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of the Bidders to perform the Work in accordance with the Contract Documents. Owner reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.
- 22.07 If a Contract is to be awarded, Owner will award the Contract to the lowest responsive and responsible Bidder who has neither been disqualified nor rejected pursuant to Article 20 of the Instructions to Bidders or this Article 22.
- 22.08 A notice of intent for award will be posted for review by interested parties in City Hall or on the City's website prior to submission through the appropriate approval process to the appropriate level for final approval of award.

ARTICLE 23 – CONTRACT SECURITIES

23.01 Performance Bond shall be in the form "Construction Performance Bond". Payment Bond shall be in the form "Construction Payment Bond". The amounts of and other requirements for Performance and Payment Bonds are stated in Paragraph 5.01 of the General Conditions. The requirements for delivery of Bonds are stated in Paragraph 2.01 of the General Conditions. Additional requirements may be stated in the Supplementary Conditions.

23.02 (Not Used)

ARTICLE 24 – CONTRACTOR'S INSURANCE

24.01 The requirements for Contractor's insurance are stated in Article 5 of the General Conditions and in the Supplementary Conditions. The requirements for delivery of

certificates of insurance and other evidence of insurance are stated in Paragraph 2.01.B of the General Conditions.

- 24.02 Successful Bidder shall within 15 days from the date of the Notice of Award deliver to Owner, for review and approval, the required policies of insurance. Upon approval, the policies will be returned to the Bidder and Bidder shall submit certificates of insurance and other evidence of insurance to the Owner as stated in the General Conditions.

ARTICLE 25 – SIGNING OF AGREEMENT

- 25.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement along with the other Contract Documents which are identified in the Agreement as attached thereto. Within 15 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within ten days thereafter, Owner will deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

ARTICLE 26 – NOTICE TO PROCEED

- 26.01 Issuance of the Notice to Proceed shall be as stated in Article 2 of the General Conditions.

ARTICLE 27 – PARTNERING (Not Used)

ARTICLE 28 – SALES AND USE TAXES

- 28.01 Refer to the Paragraph SC-6.10 of the Supplementary Conditions for information on Owner's exemption from sales and use taxes on materials and equipment to be incorporated into the Work. Do not include said taxes in Bid.

ARTICLE 29 – LOCAL PREFERENCE

- 29.01 Unless otherwise noted in the solicitation, preference shall be given to a "local business" in the awarding of any Invitation to Bid (ITB), Request for Proposal (RFP) or Request for Qualifications (RFQ) in accordance with Section 2-217 of the City of Venice's Code. Local preference shall not apply to other types of solicitations unless explicitly stated in the subject solicitation.
- 29.02 "Local business" means the vendor has paid a local business tax to either Sarasota, Manatee, DeSoto or Charlotte County, whichever county the Bidder is located, if applicable prior to bid submission that authorizes the Bidder to provide the commodities or services to be purchased, and maintains a permanent physical business address located within the limits of either Sarasota, Manatee, DeSoto or Charlotte County from which the Bidder operates or performs business, and at which at least one full time employee is located.

- 29.03 In addition, fifty percent (50%) or more of the employees based at the local business location must reside within Sarasota, Manatee, DeSoto or Charlotte County.
- 29.04 In the event the local office is not the primary location of the Bidder, at least ten percent (10%) of the Bidder's entire full-time employees must be based at the local office location. Alternatively, this requirement may be satisfied if at least one corporate officer, managing partner or principal owner of the Bidder resides in Sarasota, Manatee, DeSoto or Charlotte County.
- 29.05 Bidders wishing to be given preference as a local business must submit with their Bid, all of the Local Preference documentation identified in the "Required Forms Section" of the solicitation.
- 29.06 For local preference to be granted, the name of the company represented on the required forms must be the same as the name on the Local Preference documentation.
- 29.07 Information regarding Sarasota County's Local Business Tax can be found at www.sarasotataxcollector.governmax.com.
- 29.08 In case of a Bid submitted by more than one entity, any one of those entities can qualify the Bid for the local preference. Sub-contractors or sub-consultants cannot qualify a Bid for local preference.

ARTICLE 30 – PUBLIC RECORDS/TABULATION

- 30.01 Bids are not public records, subject to the provisions of Florida State Statutes, Chapters 119 and 120, until such time as notice of a decision or intended decision is provided, or within thirty (30) days after the bid opening, whichever is earlier. A copy of the tabulation results will be forwarded upon receipt of a stamped, self-addressed envelope. An electronic tabulation will be posted on Demand Star at the Internet Website at <http://www.demandstar.com/>.

ARTICLE 31 – INDEMNIFICATION/HOLD HARMLESS

- 31.01 The Bidder shall defend, indemnify and hold the Owner, the Owner's representatives or agents, and the officers, directors, agents, employees, and assigns of each harmless for and against any and all claims, demands, suits, judgments, damages to persons or property, injuries, losses or expenses of any nature whatsoever arising directly or indirectly from or out of any negligent act or omission of the Bidder, its sub-consultants and their officers, directors, agents or employees; any failure of the elected firm to perform its services hereunder in accordance with generally accepted professional standards; any material breach of the elected firm representations as set forth in the proposal or any other failure of the elected firm's to comply with the obligations on its part to be performed under this contract.

ARTICLE 32 - PUBLIC ENTITY CRIMES/NON-COLLUSIVE AFFIDAVIT

- 32.01 Each Bidder shall complete the Non-Collusive Affidavit and the Public Entity Crimes Form and shall submit the forms with the submittal. Owner considers the failure of the Bidder to submit these documents to be a major irregularity and may be cause for rejection of their submittal.
- 32.02 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 response on a contract to provide any goods or services to a public entity, may not submit a response on a contract with a public entity for the construction or repair of a public building or public work, may not submit responses on leases of real property to a public entity, may not be awarded or perform work as a Bidder, supplier, Sub-Bidder, 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.
- 32.03 Termination for Cause: Any Agreement with the Owner obtained in violation of this Section shall be subject to termination for cause. A Sub-Bidder who obtains a subcontract in violation of this Section shall be removed from the Project and promptly replaced by a Sub-Bidder acceptable to the City.

ARTICLE 33 – GRATUITIES AND KICKBACKS

- 33.01 Gratuities: It is unethical for any person to offer, give, or agree to give any employee or for any employee to solicit, demand, accept or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, preparation of any part of program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, audit, or in any other advisory capacity in any proceeding or application, request for ruling, determination claim or controversy, or other particular matter, pertaining to any program requirement or an Agreement or subcontract, or to any solicitation or proposal therefore.
- 33.02 Kickbacks: It shall be unethical for any payment, gratuity, or offer of employment to be made by or on behalf of a Sub-Bidder under a Contract to Bidder or higher tier Sub-Bidder any person associated therewith, as an inducement of the award of a subcontract or order.
- 33.03 Contract Clause: The prohibition against gratuities and kickbacks prescribed in this section shall be conspicuously set forth in every Contract and subcontract and solicitation therefore.

ARTICLE 34 – EQUAL EMPLOYMENT OPPORTUNITY

- 34.01 Bidder shall be in compliance with Executive Order 11426 Equal Opportunity as amended by Executive Order 11375, and as supplemented by the Department of Labor Regulations as applicable.

ARTICLE 35 – CONFLICT OF INTEREST

35.01 No employee of an agency acting in his or her official capacity as a purchasing agent, or public officer acting in his or her official capacity, shall either directly or indirectly purchase, rent, or lease any realty, goods, or services for his or her own agency from any business entity of which the officer or employee or the officer's or employee's spouse or child is an officer, partner, director, or proprietor or in which such officer or employee or the officer's or employee's spouse or child, or any combination of them, has a material interest. Nor shall a public officer or employee, acting in a private capacity, rent, lease, or sell any realty, goods, or services to the officer's or employee's own agency, if he or she is a state officer or employee, or to any political subdivision or any agency thereof, if he or she is serving as an officer or employee of that political subdivision. The foregoing shall not apply to district offices maintained by legislators when such offices are located in the legislator's place of business or when such offices are on property wholly or partially owned by the legislator. This subsection shall not affect or be construed to prohibit contracts entered into prior to:

- October 1, 1975
- Qualification for elective office
- Appointment to public office
- Beginning public employment

ARTICLE 36 – DRUG FREE WORKPLACE

36.01 The Owner has adopted a policy in observation of the Drug Free Work Place Act of 1988. Therefore, it is unlawful to manufacture, distribute, disperse, possess, or use any controlled substance in the Owner's workplace. The Owner requests the attached Drug Free Workplace Affidavit to accompany your response. This form has been adopted by the Owner in accordance with the Drug Free Workplace Act. The Owner will not disqualify any respondent who does not concur with the affidavit. The Drug Free Workplace Affidavit is primarily used as tiebreaker when two or more separate entities have submitted proposals at the same price, terms and conditions.

ARTICLE 37 – APPLICABLE LAWS

37.01 Interested parties are advised that all Owner contracts and/or documentation pertinent to this solicitation are subject in full or in part to all legal requirements provided in applicable City Ordinances, State Statutes, and Federal Regulations. Uniform Commercial Code, Chapter 672, Florida State Statutes shall prevail, as the basis for contractual obligations between the Bidder and the Owner for any terms and conditions not specifically stated within the context of this contract.

ARTICLE 38 – DISCLOSURE – PUBLIC OFFICER, PUBLIC EMPLOYEE OR ADVISORY BOARD MEMBER OF OWNER

38.01 Sections 112.313(3) and 112.313(7), Florida Statutes, prohibit any public officer,

employee, or advisory board member of the Owner from holding any employment or contractual relationship with any business entity doing business with the Owner. Section 112.313(12) provides that a public officer, employee, or advisory board member will not be in violation of the prohibition if all three of the following conditions are met. The filing of the disclosure form with the Supervisor of Elections is the sole responsibility of the Proposer and must be filed prior to or at the time of submission of the proposal. A copy of the filed disclosure form shall be submitted as part of the proposal.

- 38.02 Bid is awarded under a sealed, competitive Bid to lowest or best Bidder system. Advisory board member is required to, prior to or at the time of the submission of the Bid, file a statement with the Supervisor of Elections, disclosing his interest and the nature of the intended business. The form is entitled "Form 3A Interest in Competitive Proposal for Public Business," a copy of which is available from the Owner's Procurement- Finance Department.
- 38.03 The public officer, employee, or advisory board member, spouse, or child is required to have in no way used or attempted to use his influence to persuade a member of the Owner or any of its personnel to enter into such a contract other than by the mere submission of the Bid.
- 38.04 The public officer, employee, or advisory board member, spouse, or child is required to have in no way participated in the determination of the Bid specifications or the determination of the lowest or best Bidder.

ARTICLE 39 – BID PROTESTS

- 39.01. In any case where a bidder wishes to protest either the results of, or the intended disposition of any bid, the bidder must:
 - A. File a written notice to the city manager of the bidder's intention to protest within one business day of the bid opening or the city's declaration of intent with regard to the disposition. Upon receipt of a protest, the bid process shall be suspended until the protest procedure herein described has been completed.
 - B. Within five days of filing the written notice of intent to protest, the protester shall file a formal written protest with the city manager, acting as the bid protest officer, explaining in detail the nature of the protest and the grounds on which it is based. During this five-day period, the protester is encouraged to attempt to resolve the issue with the finance department.
 - C. The protester must include with the formal written protest a bid protest bond in the form of a certified check, cashier's check or money order made payable to the city in an amount equal to five percent of the lowest acceptable bid or \$5,000.00 whichever is less. The bond will be deposited with the cashier's office where it will be put into an account and the protester will receive a receipt.

39.02 Upon timely receipt of the formal written protest and protest bond:

- A. The bid protest officer shall issue formal findings of fact and a written decision with regard to the validity or nonvalidity of the formal written protest within ten business days of the city's receipt of the protest.
- B. Within two business days of receipt of the formal findings of fact and written decision, the city shall notify the protester of the decision of the bid protest officer. Such notification shall be transmitted via certified return receipt mail.

39.03 Should the protest be found to be without merit or validity, the bid protest bond shall be forfeited to the city in its entirety, and the bid process may resume. If a decision favorable in whole or in part to the protest is rendered, a check for the full amount of the bond will be returned to the protester.

ARTICLE 40 – SCRUTINIZED COMPANIES

40.01 Pursuant to Section 287.135, F.S., a company that, at the time of bidding or submitting a proposal for a new contract or renewal of an existing contract, is on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, created pursuant to Section 215.473, F.S., is ineligible for, and may not bid on, submit a proposal for, or enter into or renew a contract with an agency or local governmental entity for goods or services of \$1 million or more. Any contract with an agency or local governmental entity for goods or services of \$1 million or more entered into or renewed on or after July 1, 2011, must contain a provision that allows for the termination of such contract at the option of the awarding body if the company is found to have submitted a false certification as provided under Subsection 287.135(5), F.S., or has been placed on either of the aforementioned lists. The Owner agrees to comply with the requirements of Section 287.135, F.S. in connection with the implementation of the Project.

Engineer:
ARCADIS U.S., Inc
14025 Riveredge Drive
Tampa, FL 33637
Phone: 813-353-5700
Fax: 813-903-9115

++ END OF INSTRUCTIONS TO BIDDERS ++

BID FORM

CITY OF VENICE
RO WTP HIGH SERVICE PUMP REPLACEMENT

TABLE OF ARTICLES

1. Bid Recipient
2. Bidder's Acknowledgements
3. Bidder's Representations
4. Bidder's Certifications
5. Basis of Bid
6. Time of Completion
7. Attachments to this Bid
8. Defined Terms
9. Bid Submittal
10. Required Forms

ARTICLE 1 - BID RECIPIENT

- 1.01 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an AGREEMENT with OWNER in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the price(s) and within the times indicated in this Bid and in accordance with the Bidding Documents.

ARTICLE 2 - BIDDER'S ACKNOWLEDGEMENTS

- 2.01 Bidder accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of OWNER. Bidder will sign the AGREEMENT and will furnish the required contract security, and other required documents within the time periods set forth in the Bidding Documents.

ARTICLE 3 - BIDDER'S REPRESENTATIONS

- 3.01 In submitting this Bid, Bidder represents that:

- A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, if any, and the following Addenda, receipt of all of which is hereby acknowledged.

Addendum No.	Date Received	Addendum No.	Date Received
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

- B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress and performance of the Work.
- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in Paragraph 4.02 of the General Conditions, and (2) reports and drawings of Hazardous Environmental Conditions identified at the Site, if any, which that have been identified in the Supplementary Conditions as provided in Paragraph 4.06 of the General Conditions.
- E. Bidder has obtained and carefully studied (or accepts the consequences for not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.
- F. Bidder does not consider that any further examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work (if any) to be performed by OWNER and others at the Site that relates to the Work as indicated in the Bidding Documents.

- H. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies and data with the Bidding Documents.
- I. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.
- J. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

3.02 Bidder further represents that:

- A. this Bid is genuine and is not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any individual or entity to refrain from bidding;
- C. Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER; and
- D. No person or persons acting in any official capacity for the OWNER are directly or indirectly interested in this Bid, or in any portion of the profit thereof.

ARTICLE 4 – BIDDER’S CERTIFICATIONS

4.01 Bidder certifies that:

- A. this Bid is genuine and is not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid
- C. Bidder; has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive or coercive practices in competing for the Contract. For the purposes of the Paragraph 4.01.D;
 - 1. Corrupt practice” means the offering, giving, or soliciting of anything of value likely to influence the action of a public official in the bidding process

2. "Fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
3. "Collusive practice" means to scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
4. "Coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 - BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

**CITY OF VENICE REVERSE OSMOSIS WATER TREATMENT PLANT
HIGH SERVICE PUMP REPLACEMENT**

Item	Description	Quantity	Unit	Total Price (In Numbers)
1	Mobilization and Demobilization	1	Lump Sum	
2	Inspect pump cans. Removal of Existing and Replacement with New High Service Pumps, Valves and Appurtenances. Rebuild and convert pressure relief valve to pressure relief and surge anticipator valve.	1	Lump Sum	
3	Sandblast and recoat pump can	5	Each	
4	Face off an existing can machine flat	5	Each	
5	Owner's Contingency Allowance for additional Civil, Mechanical, Electrical, Instrumentation, and Structural Work, as needed	1	Additional	\$50,000
6	Contingency Allowance for Required Permitting Fees	1	Lump Sum	\$5,000

Total Base Bid (Sum of Items 1 through 5, inclusive) \$ _____
(in numbers)

Total Base Bid in Words (Sum of Items 1 through 5, inclusive)
 \$ _____

Notice Needed Prior To Commencement Of WORK: _____ calendar days

NAME OF BIDDER: _____ **BIDDER'S SIGNATURE:** _____

CURRENT LICENSE NUMBER: _____ **DATE:** _____

- 5.04 Unit prices have been computed in accordance with Paragraph 11.03.B of the General Conditions.
- 5.05 Bidder acknowledges that estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids, and final payment for all Unit Price items will be based on actual quantities of Unit Price Work determined as provided in the Contract Documents.
- 5.06 All specified cash allowances are included in the price(s) set forth above and have been completed in accordance with Paragraph 11.02 of the General Conditions.

ARTICLE 6 - TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete within 265 calendar days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and will be completed and ready for final payment in accordance with paragraph 14.07.B of the General Conditions within 285 calendar days after the date when the Contract Times commence to run, which days will be entered by OWNER into the AGREEMENT as the Contract Times.
- 6.02 Bidder accepts the provisions of the AGREEMENT as to liquidated and special damages, if any, in the event of failure to complete the Work within the Contract Times.

ARTICLE 7 - ATTACHMENTS TO THIS BID

- 7.01 The following documents are attached to and made a condition of this Bid:
 - A. Required Bid security.
 - B. Required Bidder Qualifications Statement with supporting data.
 - C. Miscellaneous Bid Forms

ARTICLE 8 - DEFINED TERMS

- 8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders and the General Conditions and Supplementary Conditions.

ARTICLE 9 - BID SUBMITTAL

9.01 This Bid submitted on _____, 20__ by:

If Bidder is:

Individual

Name (Typed or Printed): _____

By _____
(Individual's Signature)

Doing business as _____

License or Registration Number: _____

Business Address: _____

Phone No.: _____ Facsimile: _____

A Partnership

Partnership Name: _____

By: _____
(Signature of General Partner - Attach evidence of authority to sign)

(Name (Typed or Printed): _____

License or Registration Number: _____

Business Address: _____

Phone No.: _____ Facsimile: _____

A Corporation

Corporation Name: _____

(State of Incorporation)

By _____
(Signature - Attach evidence of authority to sign)

Name and Title (Typed or Printed): _____

(CORPORATE
SEAL)

Attest: _____
(Secretary)

License or Registration Number: _____

Business Address: _____

Phone No.: _____ Facsimile: _____

Limited Liability Company

By: _____
(Firm Name)

(State of Formation)

By: _____
(Signature of Member/Authorized to Sign)

(Printed or Typed Name and Title of Member Authorized to Sign)
(Attach evidence of authority to sign.)

License or Registration Number: _____

Business Address: _____

Phone No.: _____ Facsimile: _____

A Joint Venture

Name of Joint Venture: _____

First Joint Venturer Name: _____

By: _____

(Signature of First Joint Venturer - Attach evidence of authority to sign)

Name (Typed or Printed): _____ (Title)

Title: _____

Second Joint Venturer Name: _____

By: _____

(Signature of Second Joint Venturer - Attach evidence of authority to sign)

Name (Typed or Printed): _____ (Title)

(Each joint venturer must sign. The manner of signing for each individual, partnership, corporation or limited liability company that is a party to the joint venture shall be in the manner indicated above).

Business Address: _____

Phone and FAX number and address for receipt of communications to joint venture:

Phone: _____ Facsimile: _____

ARTICLE 10 – REQUIRED FORMS

Required Forms Check List: ITB# 3025-16: RO WTP High Service Pump Replacement

- Proposal Bond
- Local Preference Form
- Qualifications Statement
- Co-operative Procurement with Other Jurisdictions
- Form 3A- Interest in Competitive Bid for Public Business
- Indemnification/Hold Harmless
- FDEP & U.S. EPA Construction Notices of Intent (NOI)
- Statement of References for Contractor
- Contractor's Statement of Sub-contractors
- Drug Free Workplace Certification
- Non-Collusive Affidavit
- Public Entity Crime Information
- Statement of "No Bid" (if applicable)

All required forms are included in this package. All forms must be filled out and returned with the firm's proposal.

Failure to do so will result in the firm being considered non-responsive and their proposal will be disallowed.

Mark N/A if not applicable to your firm

PROPOSAL BOND

**Not to be completed if a certified check is submitted.*

KNOW ALL MEN BY THESE PRESENTS: That we, the undersigned,

_____ as Principal,

and _____ as Surety

are held and firmly bound unto the City of Venice, Florida, in the sum of

_____ \$_____, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that if the attached Proposal of Principal and Surety for work specified as:

all as stipulated in said Proposal, by doing all work incidental thereto, in accordance with the plans and specifications provided heretofore, all within Sarasota County, is accepted and the bidder shall within ten (10) days after notice of said award, enter into a contract, in writing, and furnish the required Performance Bond with surety or sureties to be approved by the Director of Purchasing, this obligation shall be void; otherwise the same shall be in full force and virtue by law and the full amount of this Proposal Bond will be paid to the City as stipulated or liquidated damages.

Signed this _____ day of _____, 20__.

Principal

Surety

Principal must indicate whether corporation, partnership, company, or individual.

The person signing shall, in his own handwriting, sign the Principal's name, his own name, and his title. The person signing for a corporation must, by affidavit, show his authority to bind the corporation.

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HOW DO I DETERMINE “LOCAL PREFERENCE”

The following questions will help you determine local preference for your company.
Please answer questions 1 through 4 **FIRST**. If you answer **NO** to any questions 1 through 4, local preference does **NOT** apply.
ONLY if you answer **YES** to questions 1 through 4, may you proceed to question 5.
If you answer **YES** to any questions 5 through 7, local preference applies.
If you are unsure of how to answer any questions, please contact the City of Venice’s Purchasing Department at 941-486-2626.

Questions 1 – 4

1. Have you paid a local business tax either to Sarasota, DeSoto or Charlotte County (Manatee County does not have a local business tax) authorizing your company to provide goods or services described in this solicitation ?

YES If “yes”, proceed to question 2.

NO **If “no”, STOP, local preference does not apply.**

* If the name on the local business tax receipt is not the same as the name on the bid/solicitation submittal, local preference does not apply.

2. Does your company maintain a permanent physical business address located within the limits of Sarasota, Manatee, DeSoto or Charlotte County ?

YES If “yes”, proceed to question 3.

NO **If “no”, STOP, local preference does not apply.**

3. Does your local business office (identified in question 2) have a least one full time employee ?

YES If “yes”, proceed to question 4.

NO **If “no”, STOP, local preference does not apply.**

4. Do at least fifty percent (50%) of your company employees who are based in the local business location (identified in question 2) reside within Sarasota, Manatee, DeSoto or Charlotte County ?

YES If “yes”, proceed to question 5.

NO **If no, STOP, local preference does not apply.**

Questions 5 – 7

5. Is your local business office (identified in question 2) the primary location (headquarters) of your company ?

YES **If “yes”, STOP, local preference applies.**

NO If “no”, proceed to question 6.

6. If the local business office (identified in question 2) is not the primary location of your company, are at least ten percent (10%) of your company's entire full-time employees based at the local office location ?

YES **If "yes", STOP, local preference applies**

NO If "no", proceed to question 7

7. If your local business office is not the primary location of your company, does at least one corporate officer, managing partner or principal owner of the company reside in Sarasota, Manatee, DeSoto or Charlotte County ?

YES **If "yes", STOP, local preference applies**

NO If "no", local preference does not apply.

QUALIFICATIONS STATEMENT

The undersigned certifies under oath the truth and correctness of all statements and all answers to questions made hereinafter:

SUBMITTED TO: CITY OF VENICE
Procurement- Finance Department
401 W. Venice Avenue
Venice, Florida 34285

CHECK ONE:
 Corporation
 Partnership
 Individual
 Joint Venture
 Other

SUBMITTED BY:
NAME: _____
ADDRESS: _____
PRINCIPLE OFFICE: _____

State the true, exact, correct and complete legal name of the partnership, corporation, trade or fictitious name under which you do business and the address of the place of business.

The correct name of the Offeror is: _____

The address of the principal place of business is: _____

If the Offeror is a corporation, answer the following:

- a. Date of Incorporation: _____
- b. State of Incorporation: _____
- c. President's Name: _____
- d. Vice President's Name: _____
- e. Secretary's Name: _____
- f. Treasurer's Name: _____
- g. Name and address of Resident Agent: _____

If Offeror is an individual or partnership, answer the following:

- a. Date of Organization: _____
- b. Name, address and ownership units of all partners:

- c. State whether general or limited partnership: _____

If Offeror is other than an individual, corporation partnership, describe the organization and give the name and address of principals:

If Offeror is operating under fictitious name, submit evidence of compliance with the Florida Fictitious Name Statute.

How many years has your organization been in business under its present business name?

a. Under what other former names has your organization operated?

ACKNOWLEDGEMENT

State of _____

County of _____



SS.

On this the _____ day of _____, 20____, before me, the undersigned Notary Public of the State of _____, personally appeared _____ and (Name(s) of individual(s) who appeared before notary) whose name(s) is/are Subscribed to the within instrument, and he/she/they acknowledge that he/she/they executed it.

NOTARY PUBLIC
SEAL OF OFFICE:

NOTARY PUBLIC, STATE OF _____

(Name of Notary Public: Print, stamp, or type as commissioned)

Personally known to me, or Produced Identification: _____ DID take an oath, or DID NOT take an oath

COOPERATIVE PROCUREMENT WITH OTHER JURISDICTIONS

The vendor, by submitting a bid, authorizes other Public Agencies to "Piggy-Back" or purchase equipment or services being proposed in this invitation to bid at prices bid unless otherwise noted on the proposal sheet.

Yes _____ No _____

AUTHORIZED SIGNATURE

By submission of the ITB, the undersigned certifies that:

1. He/She has not paid or agreed to pay any fee or commission, or any other thing of value contingent upon the award of this contract, to any City of Venice, Florida employee or official or to any current consultant to the City of Venice, Florida;
2. He/She has not paid or agreed to pay any fee or commission or any other thing of value contingent upon the award of this contract to any broker or agent or any other person;
3. The prices contained in this proposal have been arrived at independently and without collusion, consultation, communication or agreement intended to restrict competition.
4. He/She has the full authority of the Offeror or to execute the proposal and to execute any resulting contract awarded as the result of, or on the basis of, the proposal.

Authorized Representative: _____

Signature: _____

Title: _____

Company Name: _____

Address: _____

City, State, ZIP: _____

Telephone Number: _____

Fax Number: _____

E-mail address: _____

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FORM 3A INTEREST IN COMPETITIVE BID FOR PUBLIC BUSINESS

LAST NAME — FIRST NAME — MIDDLE INITIAL			OFFICE / POSITION HELD
MAILING ADDRESS			AGENCY
CITY	ZIP	COUNTY	ADDRESS OF AGENCY

WHO MUST FILE THIS STATEMENT

Sections 112.313(3) and 112.313(7), Florida Statutes, prohibit certain business relationships on the part of public officers and employees, their spouses, and their children. See Part III, Chapter 112, Florida Statutes, and/or the brochure entitled "A Guide to the Sunshine Amendment and Code of Ethics for Public Officers and Employees" for more details on these prohibitions. However, Section 112.313(12), Florida Statutes, provides certain limited exemptions to the above-referenced prohibitions, including one where the business is awarded under a system of sealed, competitive bidding; the public official has exerted no influence on bid negotiations or specifications; AND where disclosure is made, prior to or at the time of the submission of the bid, of the official's or his spouse's or child's interest and the nature of the intended business. This form has been promulgated by the Commission on Ethics for such disclosure, *if and when applicable* to a public officer or employee.

INTEREST IN COMPETITIVE BID FOR PUBLIC BUSINESS *(Required by § 112.313(12)(b), Fla. Stat.)*

1. The competitive bid to which this statement applies has been / will be (strike one) submitted to the following government agency:		
2. The person submitting the bid is:	NAME ▼	POSITION ▼
3. The business entity with which the person submitting the bid is associated is:		
4. My relationship to the person or business entity submitting the bid is as follows:		
5. The nature of the business intended to be transacted in the event that this bid is awarded is as follows:		
a. The realty, goods, and / or services to be supplied specifically include: _____		
b. The realty, goods, and / or services will be supplied for the following period of time: _____		
c. Will the contract be subject to renewal without further competitive bidding? <input type="checkbox"/> Yes <input type="checkbox"/> No. If so, how often?		
6. Additional comments:		
7. SIGNATURE	DATE SIGNED	DATE FILED

FILING INSTRUCTIONS

If you are a state officer or employee required to disclose the information above, please file this form with the Department of State in Room 316, R.A. Gray Building, 500 South Bronough Street, Tallahassee, Florida 32399-0250. If you are an officer or employee of a political subdivision of this state and are subject to this disclosure, please file the statement with the Supervisor of Elections of the county in which the agency in which you are serving has its principal office.

NOTICE: UNDER PROVISIONS OF FLORIDA STATUTES §112.017, A FAILURE TO MAKE ANY REQUIRED DISCLOSURE CONSTITUTES GROUNDS FOR AND MAY BE PUNISHED BY ONE OR MORE OF THE FOLLOWING: IMPEACHMENT, REMOVAL OR SUSPENSION FROM OFFICE OR EMPLOYMENT, DEMOTION, REDUCTION IN SALARY, REPRIMAND, OR A CIVIL PENALTY NOT TO EXCEED \$10,000.

CE FORM 3A — REV. 1-95

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INDEMNIFICATION/HOLD HARMLESS

The elected firm shall (if required by City) defend, indemnify and hold the City, the City's representatives or agents, and the officers, directors, agents, employees, and assigns of each harmless for and against any and all claims, demands, suits, judgments, damages to persons or property, injuries, losses or expenses of any nature whatsoever (including attorneys' fees at trial at appellate level) arising directly or indirectly from or out of any negligent act or omission of the elected firm, its Sub-Offerrors and their officers, directors, agents or employees; any failure of the elected firm to perform its services hereunder in accordance with generally accepted professional standards; any material breach of the elected firm's representations as set forth in the proposal or any other failure of the elected firm to comply with the obligations on its part to be performed under this contract.

I, _____, being an authorized representative of the firm of
_____ located at City
_____, State _____, Zip Code _____ Phone:
_____ Fax: _____. Having read and
understood the contents above, hereby submit accordingly as of this Date,
_____, 20__.

Please Print Name

Signature

This signed document shall remain in effect for a period of one (1) year from the date of signature or for the contract period, whichever is longer.

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CITY OF VENICE, FLORIDA
FDEP & U.S. EPA CONSTRUCTION NOTICES OF INTENT (NOI)

The undersigned bidder acknowledges the requirement of the U.S. Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (FDEP) which have published the rules for NPDES General Permits for stormwater discharges from construction sites and said bidder agrees to assist the owner in the preparation of these permits and associated plans. The bidder acknowledges that he has taken these permits and associated construction costs into account in the preparation of his lump sum bid. These permits are mandated under Section 402(p) of the Clean Water Act for "Stormwater Discharge from Construction Activities (including clearing, grading, and excavation activities) that result in the disturbance of five (5) or more acres total land area, including areas that are part of a larger common plan of development or sale." The EPA has published summary guidance for: "Developing Prevention Plans and Best Management Practices" (EPA 833-R-92-001, October 1992).

The EPA permit format is a *Notice of Intent (NOI) for Stormwater Discharges Associated with Construction Activity to be covered under a NPDES Permit*, and it is to be submitted according to the NOI instructions. The Stormwater Pollution Prevention Plan which must accompany the NOI must be signed by authorized representatives of the contractor and subcontractors as well as the facility Owner. Copies of the EPA NOI must be provided to state and local agencies who have issued stormwater management, grading, or land alteration permits or approvals.

An NOI must also be submitted to the Florida Department of Environmental Protection, NPDES Stormwater Notices Center, MS 2510, 2600 Blair Stone Road, Tallahassee, FL 32399. FDEP forms may be downloaded from the State's web site <http://www.dep.state.fl.us/water/stormwater/npdes/> or phone 850-921-9870 if you have questions.

Acceptance of the bid to which this certification and disclosure applies in no way represents the Owner or its Representative has evaluated and thereby determined that the information is adequate to comply with the applicable U.S. EPA or FDEP requirements nor does it in any way relieve the contractor of its sole responsibility to comply with the applicable U.S. EPA and FDEP requirements, including inspection of all control measures at least once each week and following any storm (rainfall) event of 0.5 inches or greater and maintaining reports of each inspection.

Bidder (Company): _____

Name and Title: _____

Address: _____

Telephone: _____

BY SIGNATURE BELOW OF AUTHORIZED REPRESENTATIVE, CONTRACTOR ACKNOWLEDGES RECEIPT OF A COPY OF CITY ORDINANCES 95-12 and 96-09 AND AGREES TO ABIDE BY THE REQUIREMENTS OF SAID ORDINANCES.

Signature: _____ Date: _____

Printed name/title:

ORDINANCE 95-12

AN ORDINANCE OF THE CITY OF VENICE, FLORIDA, AMENDING THE CODE OF ORDINANCES BY AMENDING CHAPTER 9, HEALTH AND SANITATION, ARTICLE IV, DISPOSAL OF EXCRETA, SECTION 9-71, DISCHARGE OF RAW SEWAGE INTO STORMWATER; DELETING ARTICLE V, PROHIBITED STORMWATER DISCHARGES; ADDING CHAPTER 19, WATER AND SEWERS, ARTICLE VI, STORMWATER QUALITY; DELETING CHAPTER 15, STREETS AND SIDEWALKS, ARTICLE IV, EXCAVATIONS, SECTION 15-53, STORM DRAINAGE AND POLLUTION; PROVIDING FOR CONFLICT WITH OTHER ORDINANCES; PROVIDING FOR A SEVERABILITY CLAUSE AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, control of stormwater runoff is necessary from individual lots that do not require a permit from the Southwest Florida Water Management District and requiring compliance with the provisions of the Clean Water Act 33 U.S.C.1251 et.seq., as amended by the Water Quality Act of 1987; and

WHEREAS, the City is desirous of complying with its U.S. Environmental Protection Agency National Pollutant Discharge Elimination System Permit and its Stormwater Master Plan, therefore, stormwater runoff and any discharge to the City storm sewer system will be closely monitored and regulated; and

WHEREAS, the control of stormwater runoff is the responsibility of each individual property owner; and

WHEREAS, the City is desirous of controlling stormwater runoff and insuring compliance with the Comprehensive Plan.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF VENICE, FLORIDA:

SECTION 1. Chapter 9, Water and Sewers, Article IV, Disposal of Excreta, Section 9-71, Discharge of Raw Sewage into Storm Sewer, is amended to read as follows:

Sec. 9-71. Discharge of raw sewage into storm sewer.

It shall be unlawful for any person to discharge raw sewage or to discharge the effluent of and from any septic tank into the storm sewer system of the city or to construct or maintain any system of drainage, pipes, conduits or other apparatus whereby raw sewage or the effluent of and from any septic tank shall or may be discharged into or through the storm sewer system of the city.

SECTION 2. Chapter 9, Water and Sewers, Article V, Prohibited Stormwater Discharges, is deleted in its entirety.

SECTION 3. Chapter 19, Water and Sewers, Article VI, Stormwater Quality is added to read as follows:

ARTICLE VI. STORMWATER QUALITY

Sec. 19-141. Definitions.

As used in this article "industrial stormwater" means stormwater runoff from a site with industrial activities, as defined under 40 CFR Section 122.26(a)(14) U.S. Environmental Protection Agency regulation.

As used in this article "construction sites" refers to all sites.

As used in this article, "illicit discharge" is any discharge of anything other than stormwater to the municipal separate storm sewer system (MS4) or the waters of the State of Florida or the United States.

As used in this article "industrial wastewater" refers to liquids used by an entity in their course of business, that if discharged to the MS4, would degrade the quality of stormwater.

Sec. 19-142. Disposal of industrial stormwater discharges.

The following types of discharges to the municipal separate storm sewer of the city must be controlled as indicated.

(1) **Industrial wastewater/illicit discharge:** Industrial wastewater/illicit discharge may not be discharged to the city's municipal separate storm sewer system.

(2) **Industrial stormwater:** As required to comply with NPDES regulations, the quality of industrial stormwater which is discharged through the city's municipal separate storm sewer system may be subject to regulation or permitting, and any violation of such regulation or permit may be subject to an order to immediately cease such

discharge.

Sec. 19-143. Runoff stormwater and Best Management Practice (BMPs) for construction sites.

BMPs shall be implemented as necessary, to insure that all discharges from construction activities are in compliance with the City of Venice EPA/NPDES Stormwater Permit and the Stormwater Master Plan, or the SWFWMD Permit or EPA's NPDES Construction Activity General Permit, whichever is most stringent in its requirements.

Best Management Practices include but are not limited to, the following requirements:

- (a) All site grading shall be conducted in such a manner that all stormwater management facilities located adjacent to the site are not altered in any way which will diminish their designated flow or pollutant removal capacity or the shape of the drainage facility.
- (b) Maintenance of vegetative buffers or use of a silt fence and/or staked hay bales which minimize erosion and retain sediment on site, shall be implemented prior to any construction activities taking place at sites which discharge to surface water or the municipal separate storm sewer system (MS4). These controls, when utilized, shall be secured and properly maintained during construction activities until the site has been stabilized with sod and/or seed and mulch. A double silt fence may be required as an additional measure to insure that discharges from the site are in compliance with water quality standards as established by the EPA/NPDES Stormwater Permit. Undisturbed vegetative buffers shall be maintained intact to the maximum extent possible to reduce erosion and the discharge of sediment from stormwater runoff. All areas of exposed soil shall be stabilized within 72 hours of attaining final grade.
- (c) Storm sewer systems (eg. inlets, pipes and ditches, etc.) adjacent to the site must be protected by a silt fence and/or staked hay bales during construction, to keep solids from entering conveyance systems.
- (d) Vehicles such as concrete or dump trucks and other construction equipment shall not be washed at locations where the runoff will flow directly into a lake, wetland, watercourse or stormwater conveyance system. Special areas must be designated for washing vehicles. In all new subdivisions, a wash area may be established by the owner/developer which can be used by the site contractor and home builders. If established, wash areas shall be located where the wash water will spread out and evaporate or infiltrate directly into the ground, or where the runoff can be collected in a temporary holding or seepage basin. Gravel or rock bases are recommended for temporary holding or seepage basins, to minimize mud generation. Underdrains shall be installed where infiltration basins are provided as required by the owner/developer's engineer or the Southwest Florida Water Management District. Upon completion of the project, the wash areas shall be graded and stabilized and any trash or waste shall be collected and disposed of properly.
- (e) Fuel, chemicals, cements, solvents, paints, topsoil, or other potential water pollutants shall be stored in areas where they will not cause runoff pollution. Toxic chemicals and materials, such as pesticides, paints, and acids, must be stored in accordance with manufacturer's guidelines. Groundwater resources shall be protected from leaching by placing a plastic mat, packed clay, tar paper, or other impervious material on any areas where toxic liquids are to be opened and stored.
- (f) A minimum of one permitted driveway must be established prior to construction and shall be used as the only access for ingress/egress during construction in order to provide minimum disturbance of drainage facilities and vegetative cover on site.

Sec. 19-44. Owner responsibility for stormwater runoff.

- (a) The control of stormwater runoff is the responsibility of each individual property owner.
- (b) Any property owner constructing or causing to be constructed any building which requires an elevated slab and the elevation of the building pad is higher than that of adjoining properties, will control stormwater runoff during construction. Likewise, any property that is filled more than twelve inches above the adjacent property must provide additional control measures for stormwater during construction. Upon completion of the work, all stormwater runoff shall flow to its natural preconstruction drainage swale, ditch, etc., or be retained in a retention or detention pond(s) designed and constructed for that purpose.
- (c) For any construction where the elevation of the building pad or site fill will be higher than adjoining properties, construction plans certified by a professional engineer registered with the State of Florida, retained by the property owner, will be provided to the City prior to issuance of a building permit.
- (d) Any single lot not covered under Southwest Florida Water Management District rules, exceeding forty-five percent in impervious coverage (including buildings, drives, sidewalks, patios, etc.) shall require stormwater retention facilities to be designed by a Florida registered engineer. The design is to meet the City of Venice EPA/NPDES Permit requirements for quantity and quality of treatment.
- (e) The property owner's engineer will be required to certify to the City Engineer that construction was completed in accordance with the certified plans, prior to issuance of a Certificate of Occupancy.

(f) All improvements to property affecting stormwater drainage must be done in compliance with the City's Comprehensive Plan.

Sec. 19-145. Illicit discharges.

It shall be unlawful for any person to discharge anything other than stormwater into the city's municipal separate storm sewer system whether such discharges occur through piping connections, runoff, exfiltration, infiltration, seepage, or leaks. No person may maintain, use, or establish any direct or indirect connection to any storm sewer owned by the city that results in any discharge in violation of any provision of federal, state, city, or other law or regulation. This provision is retroactive to January 1, 1995, and applies to connections made prior to the effective date of this provision, regardless of whether made under a permit, or other authorization, or whether permissible under laws or practices applicable or prevailing at the time the connection was made.

No materials other than those composed entirely of stormwater shall be disposed of, dumped, or spilled into the city's municipal separate storm sewer system, whether such materials are in a solid or liquid form.

Sec. 19-146. Inspections.

It shall be the duty of the city engineer or designee to carry out all inspections, surveillance, and monitoring procedures necessary to determine compliance with this article.

SECTION 4. Chapter 15, Streets and Sidewalks, Article IV, Excavations, Section 15-53, Storm Drainage and Pollution, is deleted in its entirety.

SECTION 5. To the extent of any conflict between the provisions of this Ordinance, and any other Ordinance, Resolution, or Agreement of the City of Venice, Florida, the provisions of this Ordinance shall prevail.

SECTION 6. Severability. If for any reason a provision of this Ordinance or the application thereof to any person, group of persons, or circumstances is held invalid, the invalidity shall not effect other provisions or applications of the Ordinance which can be given effect without the invalid provision or application, and to this end the provisions of the Ordinance are severable.

SECTION 7. Effective Date. This Ordinance shall take effect immediately upon its adoption, as required by law.

PASSED BY THE COUNCIL OF THE CITY OF VENICE, FLORIDA, THIS 23RD DAY OF MAY, 1995.

First Reading: May 9, 1995 - Final Reading: May 23, 1995 - ADOPTION: May 23, 1995

ATTEST: /s/LORI STELZER, CMC, CITY CLERK /S/ MERLE L. GRASER, MAYOR

I, LORI STELZER, City Clerk of the City of Venice, Florida, a municipal corporation in Sarasota County, Florida, do hereby certify that the foregoing is a full and complete, true and correct copy of an Ordinance duly adopted by the Venice City Council, at a meeting thereof duly convened and held on the 23rd day of May, 1995, a quorum being present.

WITNESS my hand and the official seal of said City this 24th day of May, 1995.

/S/ LORI STELZER, CMC, CITY CLERK Approved as to form: /S/ ROBERT C. ANDERSON, CITY ATTORNEY

/S/ LORI STELZER, CMC, CITY CLERK Approved as to form: /S/ ROBERT C. ANDERSON, CITY ATTORNEY.

STATEMENT OF REFERENCES
FOR CONTRACTOR

NAME OF CONTRACTOR: _____

BUSINESS ADDRESS: _____

How many years have you been engaged in the business under the present firm name? _____

List previous business experience: _____

List at least three construction references:

(1) Person to contact: _____

Company Name: _____

Address: _____

Telephone: _____ Date work performed: _____

(2) Person to contact: _____

Company Name: _____

Address: _____

Telephone: _____ Date work performed: _____

(3) Person to contact: _____

Company Name: _____

Address: _____

Telephone: _____ Date work performed: _____

(4) Person to contact: _____

Company Name: _____

Address: _____

Telephone: _____ Date work performed: _____

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**CONTRACTOR'S STATEMENT OF
SUBCONTRACTORS TO BE USED FOR THIS WORK**

NAME OF CONTRACTOR: _____

BUSINESS ADDRESS: _____

LIST SUBCONTRACTORS TO BE USED IN THE PROJECT:

(1) Company Name: _____

Address: _____

Telephone: _____ Phase of Work Sublet: _____

(2) Company Name: _____

Address: _____

Telephone: _____ Phase of Work Sublet: _____

(3) Company Name: _____

Address: _____

Telephone: _____ Phase of Work Sublet: _____

(4) Company Name: _____

Address: _____

Telephone: _____ Phase of Work Sublet: _____

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DRUG FREE WORKPLACE CERTIFICATION

If identical tie bids exist, preference will be given to the vendor who submits a certification with their bid/proposal certifying they have a drug-free workplace in accordance with Section 287.087, Florida Statutes. The drug-free workplace preference is applied as follows:

IDENTICAL TIE BIDS: Preference shall be given to businesses with drug-free workplace programs. Whenever two or more bids, which are equal with respect to price, quality, and service, are received by the State or by any political subdivision for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none of the tied vendors have a drug-free workplace program.

As the person authorized to sign this statement, I certify that this firm complies fully with the following requirements:

- 1) This firm publishes 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) This firm informs 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) This firm gives 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), this firm notifies 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) This firm imposes a sanction on or requires 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) This firm will continue to make a good faith effort to maintain a drug-free workplace through implementation of this section.

Contractor's Name Signature

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NON-COLLUSIVE AFFIDAVIT

State of _____

County of _____

} SS.

_____ being first duly sworn, deposes and says that:

1. He/she is the _____, (Owner, Partner, Officer, Representative or Agent) of _____ the Offeror that has submitted the attached Proposal;
2. He/she is fully informed respecting the preparation and contents of the attached Proposal and of all pertinent circumstances respecting such Proposal;
3. Such Proposal is genuine and is not a collusive or sham Proposal;
4. Neither the said Offeror 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 Offeror, firm, or person to submit a collusive or sham Proposal in connection with the Work for which the attached Proposal has been submitted; or have in any manner, directly or indirectly sought by agreement or collusion, or have in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference with any Offeror, firm, or person to fix the price or prices in the attached Proposal or of any other Offeror, or to fix any overhead, profit, or cost elements of the Proposal price or the Proposal price of any other Offeror, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against (Recipient), or any person interested in the proposal Work.

Signed, sealed and delivered in the presence of:

By: _____

(Printed Name)

(Title)

ACKNOWLEDGEMENT

State of _____

County of _____

On this _____ day of _____, 20____, before me, the undersigned Notary Public of the State of _____, personally appeared _____ and (Name(s) of Individual(s) who appeared before notary) whose name(s) in/are Subscribed to the written instrument, and he/she/they acknowledge that he/she/they executed it.

NOTARY PUBLIC, STATE OF _____

NOTARY PUBLIC
SEAL OF OFFICE:

(Name of Notary Public: Print, stamp, or type as commissioned)

Personally known to me, or Produced Identification: _____ DID take an oath, or DID NOT take an oath

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PUBLIC ENTITY CRIME INFORMATION

A person or affiliate who has been placed on the State of Florida’s convicted vendor list following a conviction for a public entity crime may not submit a BID/ITB proposal on a contract to provide any goods or services to a public entity, may not submit a response on a contract with a public entity for services in 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, Sub-Contractor, or Contractor 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 2876.017, 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 firm of _____, located at City:
_____ State: _____ Zip: _____, have
read and understand the contents of the Public Entity Crime Information and of this
formal BID/ITB package, hereby submit our proposal accordingly.

Signature: _____
Phone: _____
Federal ID#: _____

Date: _____
Fax: _____

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NO BID RESPONSE

IMPORTANT: If you choose not to submit a bid for the attached "Invitation To Bid," please complete and return this form only on/before bid closing date. Failure to respond will result in your company being negatively registered as non-responsive. In the event five (5) "no responses" are posted, you will be automatically dropped from our mailing list for future solicitations for the described product/service.

Thank you for taking this opportunity to help us update and improve the solicitation process.

Bid Open/Close Date: **March 24, 2016 at 2:00 PM**

Bid Number: **3025-16**

Description: The replacement of three existing high service pumps, associated piping valves and appurtenances; replacement of silent check valves with new swing check valves; replacement of associated ARV's, pressure switches/gauges and appurtenances; and; disassembly of the surge anticipator valve and convert to a pressure relief/surge anticipator valve.

Contact: Peter Boers, Procurement- Finance Department

Please check the appropriate response. We respectfully submit "No bid" for the following reason(s):

- 1. We are unable to meet the required delivery date
- 2. We cannot provide a product to meet the required specifications.
- 3. We no longer provide the requested product.
- 4. We do not represent the required brand name product.
- 5. The bid closing date does not allow adequate time to prepare a response.
- 6. The specifications are too restrictive.
- 7. We have chosen not to do business with the City
- 8. Other (feel free to provide our response on your company letterhead.)

Company Name _____

Authorized Signature _____

Print Name _____

Title _____

Date _____ Telephone No. _____

++ END OF BID FORM ++

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SAMPLE CONTRACT

THIS CONTRACT, pursuant to City Council approval granted on _____, is made and entered into this _____ day of _____, 20____, by and between the City of Venice, Florida, hereinafter referred to as the City, and _____, hereinafter referred to as the Contractor.

W I T N E S S E T H:

THAT FOR and in consideration of the mutual covenants and obligations hereafter set forth, the parties hereto agree as follows:

(1) The Contract Documents consist of this Contract, Performance and Payment Bonds attached hereto as composite Attachment A and, the City’s Invitation to Bid (ITB) # **3025-16 RO WTP High Service Pump Replacement**, including: standard general conditions, supplemental conditions, special conditions, technical specifications, drawings, Contractor’s bid proposal for ITB 3025-16, all of which are incorporated herein by reference. All of the Contract Documents are made a part of this Contract.

(2) The Contractor shall perform all the work required by the Contract Documents and shall include installation of the listed items per the bid specifications.

(3) The work to be performed under this Contract shall be completed within two hundred eighty five (285) days of the issuance of the Notice to Proceed by the City.

(4) The City shall pay the Contractor for the performance of the work, in accordance with Exhibit B, subject to the terms and conditions of the Contract Documents and any written change orders, the contract sum not to exceed: _____ & ___/100s (\$ _____).

(5) Time is of the essence in this contract. In the event that the work is not completed within the required time as specified in Section 3 herein, then from the compensation otherwise to be paid to the Contractor, the City may retain the sum of **one thousand five hundred thirty-two dollars (\$ 1,532) per day** for each calendar day that the work remains incomplete beyond the time limit, which sum shall represent the actual damage which the City will have sustained per day by failure of the Contractor to complete the work within the required time, said sum not being a penalty but being the stipulated damages the City will have sustained in the event of such default by the Contractor.

(6) In connection with the performance of work under this Contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, sex, religion, color, or national origin. The aforesaid provision shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, lay-off or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor agrees to post hereafter in conspicuous places, available for employees or applicants for employment, notices to be provided by the contracting officer setting forth the provisions of the non-discrimination clause. The Contractor further agrees to insert the

foregoing provisions in all contracts hereunder, including contracts or agreements with labor unions and/or workers' representatives, except subcontracts for standard commercial supplies or raw materials.

(7) Contractor must secure and maintain any and all permits and licenses required to complete the work under this Contract, unless the Contract Documents provide otherwise.

(8) Throughout the term of this Contract the Contractor must maintain insurance in at least the amounts and coverage required as shown in Exhibit C. The Contractor must provide a Certificate of Insurance to the City evidencing such coverage prior to issuance of the Notice to Proceed by the City.

(9) Pursuant to applicable Florida law, Contractor's records associated with this Contract may be subject to Florida's public record laws, Florida Statutes 119.01, *et seq*, as amended from time to time. Contractor shall comply with all public records obligations set forth in such laws, including those obligations to keep, maintain, provide access to, and maintain any applicable exemptions to public records, and transfer all such public records to the City at the conclusion of this Contract, as provided for in Section 119.0701, Florida Statutes.

(10) Contractor shall indemnify, pay the cost of defense, including attorneys' fees, and hold harmless the City from all suits, actions, or claims of any kind brought on account of any injuries or damages received or sustained by any person or property by or from the Contractor or in consequence of any neglect in safeguarding the work; or by the use of any unacceptable materials related to the work; or on account of any act or omission, neglect or misconduct of the Contractor; or on account of any claim or amounts received under the "Workers' Compensation Law" or any other laws or ordinances, except only such injury or damage as shall have been caused by the negligence of the City. The first ten dollars (\$10.00) of compensation received by the Contractor represents specific consideration for this indemnification obligation.

(11) Contractor shall be responsible for compliance with the requirements under Chapter 556, Florida Statutes, the "Underground Facility Damage Prevention and Safety Act." Contractor's obligations to defend, indemnify, and hold harmless the City, as provided for under Section 10 of this Contract, shall specifically apply to any violations alleged against the City under the Underground Facility Damage Prevention and Safety Act related to the performance of the work under this Contract. Contractor acknowledges that included in the various items of the proposal and in the total bid price, are costs for complying with the Florida Trench Safety Act (90-96 Laws of Florida) effective October 1, 1990.

(12) Termination. This Contract may be terminated by the City without cause, by giving thirty (30) days prior written notice to contractor of the intention to cancel. or with cause at any time contractor fails to fulfill or abide by any of the terms or conditions specified. Failure of contractor to comply with any of the provisions of this agreement shall be considered a material breach of contract and shall be cause for immediate termination of the agreement at the discretion of the city. This Contract may be terminated by the Contractor only by mutual consent of both parties. If this Contract is terminated before performance is completed, the Contractor shall be paid only for that work satisfactorily performed for which costs can be substantiated.

(13) The laws of the State of Florida shall govern all provisions of this Contract. Venue

for any dispute shall be Sarasota County, Florida. If any court proceeding or other action occurs between the parties as a result of this Contract or any other document or act required by this Contract, the prevailing party shall be entitled to recover attorney's fees and all court costs, including attorney's fees and court costs incurred in any pre-trial, trial, appellate, and/or bankruptcy proceedings, as well as, attorney's fees and costs incurred in determining entitlement to and reasonableness of fees and costs.

(14) This Contract and the Contract Documents constitute the entire agreement of the parties and may not be changed or modified, except by a written document signed by both parties hereto. This Contract shall be binding upon the successors and assigns of the parties.

IN WITNESS WHEREOF, the parties to the agreement have hereunto set their hands and seals and have executed this agreement, the day and year first above written.

(SEAL)

ATTEST: CITY OF VENICE
IN SARASOTA COUNTY, FLORIDA

CITY CLERK

BY: _____
MAYOR JOHN HOLIC

ATTEST: _____

BY: _____

Signed by (typed or printed)

Signed by (typed or printed)

Approved as to Form and Correctness

David Persson, City Attorney

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EXHIBIT A

SURETY BONDS

At the time of executing the Contract Documents, the successful proposer shall append to this sheet separate performance and payment bonds each equal to one-hundred percent (100%) of the contract amount. Said bonds become an integral part of these Contract Documents and shall meet the following requirements:

1. Surety bonds submitted shall be written by a surety company that is approved by the City Finance Director and authorized to do business in the State of Florida, shall be accompanied by evidence of the authority of the issuing agent, and shall be on a form to be approved by the City Attorney. No bond in an amount greater than \$5,000 required by the City Charter, the Ordinances of The City of Venice, or the laws of the State of Florida shall be approved by the City Finance Director unless the surety company executing the bond is listed by the United States Treasury Department as being approved for writing bonds for Federal projects and its current list in an amount not less than the amount of the bond tendered to The City of Venice.

2. Both the separate payment and performance bonds shall be in the general form of AIA documents A311. Additionally, the payment bond shall state as follows:

“This bond is issued in compliance with Section 255.05, Florida Statutes (1994 Supp.), as may be amended. A claimant, except a laborer, who is not in privity with the contractor and who has not received payment for his labor, materials, or supplies shall, within 45 days after beginning to furnish labor, materials, or supplies for the prosecution of the work, furnish the contractor with a notice, that he intends to look to the bond for protection. A claimant who is not in privity with the contractor and who has not received payment for his labor, materials, or supplies shall, within 90 days after performance of the labor or after complete delivery of the materials or supplies, or with respect to rental equipment, within 90 days after the date that the rental equipment was last on the job site available for use, deliver to the contractor and to the surety written notice of the performance of the labor or delivery of the materials or supplies and of the nonpayment. No action for the labor, materials, or supplies may be instituted against the contractor or the surety unless both notices have been given. No action shall be instituted against the contractor or the surety on the payment bond or the payment provisions of a combined payment and performance bond after 1 year from the performance of the labor or completion of delivery of the materials or supplies. A claimant may not waive in advance his right to bring an action under the bond against the surety. In any action brought to enforce a claim against a payment bond under this section, the prevailing party is entitled to recover a reasonable fee for the services of his attorney for trial and appeal or for arbitration, in an amount to be determined by the court, which fee must be taxed as part of his costs, as allowed in equitable actions.”

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PUBLIC WORKS PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT _____, as Principal, hereinafter called Contractor; and _____, a corporation of the State of Florida, as surety, hereinafter called Surety, are held and firmly bound unto the City of Venice as Obligee, hereinafter called the City, in the amount of (\$_____) _____/100's, for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated the _____day of _____, 20__, entered into a Contract with the City for the following described project: **ITB# 3025-16 RO WTP High Service Pump Replacement** which contract is by reference incorporated herein and made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if Contractor shall promptly make payments to all persons supplying Contractor labor, materials and supplies, used directly or indirectly by the said Contractor or Subcontractors in the prosecution of the work provided for in said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

PROVIDED FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the Specifications accompanying the same shall in anywise affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Specifications.

PROVIDED FURTHER, that this Bond is issued pursuant to Section 255.05, Florida Statutes, and reference is hereby made to the notice and time limitations in said statute for making claims against this Bond.

PROVIDED FURTHER, that any suit under this Bond must be instituted before the expiration of one (1) year from the performance of the labor or completion of delivery of the materials or supplies.

PROVIDED FURTHER, no right of action shall accrue on this Bond to or for the use of any person or corporation other than the City named herein and those persons or corporations provided for by Section 255.05, Florida Statutes, their heirs, executors, administrators, successors or assigns.

SIGNED AND SEALED this _____ day of _____, A.D., 20__.

IN THE PRESENCE OF:

CONTRACTOR

BY: _____

INSURANCE COMPANY

BY: _____
Agent and Attorney-in-Fact

PUBLIC WORKS PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT _____, as Principal, hereinafter called Contractor; and _____, a corporation of the State of Florida, as surety, hereinafter called Surety, are held and firmly bound unto the City of Venice as Obligee, hereinafter called the City, in the amount of (\$ _____) & _____/100's, for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated the _____ day of _____, 20___, entered into a contract with the City of Venice for the following described project: **ITB# 3025-16 RO WTP High Service Pump Replacement** which contract is by reference incorporated herein and made a part hereof, and is hereinafter referred to as the contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Contractor shall promptly and faithfully perform the Contract during the original term thereof and any extensions thereof which may be granted by the City with or without notice to the Surety and during any guarantee or warranty period, including the obligation to correct any latent defects not discovered until after acceptance of the project by the City, and if he shall satisfy all claims and demands incurred under said Contract and shall fully indemnify and save harmless the City, its agents, Engineer and employees from all losses, damages, expenses, costs and Attorney's Fees, including appellate proceedings which it may suffer by reason of failure to do so, and shall reimburse and repay the City all outlay and expense which the City may incur in making good any default, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

PROVIDED FURTHER, whenever Contractor shall be, and declared by the City to be in default under the Contract, the City having performed its obligations thereunder, the Surety may promptly remedy the default or shall promptly:

- (1) Complete the Contract in accordance with its terms and conditions; or
- (2) Obtain a bid or bids for submission to the City for completing the Contract in accordance with its terms and conditions and upon determination by the City and Surety of the lowest responsible bidder, arrange for a contract between such bidder and City and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion, less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price" as used in this paragraph, shall mean the total

amount payable by the City to Contractor under the Contract and any amendments thereto, less the amount properly paid by the City to the Contractor.

PROVIDED FURTHER, the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder or the Contract Documents accompanying the same shall in any waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the Contract Documents.

PROVIDED FURTHER, any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due; except that, when the action involves a latent defect, suit must be instituted within four (4) years from the time the defect is discovered or should have been discovered with the exercise of due diligence.

PROVIDED FURTHER, no right of action shall accrue on this bond to or for the use of any person or corporation other than the City, its successors or assigns.

SIGNED AND SEALED this _____ day of _____, AD., 20__.

IN THE PRESENCE OF:

CONTRACTOR

BY: _____

INSURANCE COMPANY

BY: _____
Agent and Attorney-in-Fact

EXHIBIT B

(Bid Form to be Supplied)



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EXHIBIT C

Before performing any work, the Contractor shall procure and maintain, during the life of the Contract, insurance listed below. The policies of insurance shall be primary and written on forms acceptable to the City and placed with insurance carriers approved and licensed by the Insurance Department in the State of Florida and meet a minimum financial AM Best and Company rating of no less than A:VII. No changes are to be made to these specifications without prior written specific approval by the City.

1. The City of Venice is to be specifically included as an **ADDITIONAL INSURED**.
2. The City of Venice shall be named as Certificate Holder. *Please Note that the Certificate Holder should read as follows:*

*The City of Venice
401 W. Venice Avenue
Venice, FL 34285*

No City Division, Department, or individual name should appear on the certificate. **NO OTHER FORMAT WILL BE ACCEPTABLE.**

3. The “Acord” certification of insurance form shall be used.
 4. Required Coverage
 - a) **Commercial General Liability:** including but not limited to bodily injury, property damage, contractual liability, products and completed operations, and personal injury with limits of not less than \$ 1,000,000 per occurrence, \$ 1,000,000 aggregate covering all work performed under this Contract. Include broad form property damage (provide insurance for damage to property under the care custody and control of the contractor)
 - b) **Business Auto Policy:** including bodily injury and property damage for all vehicles owned, leased, hired and non-owned vehicles with limits of not less than \$1,000,000 combined single limit covering all work performed under this Contract.
 - c) **Workers Compensation:** Contractor will provide Workers Compensation Insurance on behalf of all employees, including sub-contractors, who are to provide a service under this Contract, as required under Florida Law, Chapter 440, and Employers Liability with limits of not less than \$100,000 per employee per accident; \$500,000 disease aggregate; and \$100,000 per employee per disease.
 - d) **Installation Floater/Installation Builders’ Risk–Property Coverage:** Policy to cover direct physical loss or damage to materials, supplies, machinery, and equipment being installed, constructed or rigged by the contractor in conjunction with its installation or construction. All items involved in the project including drainage/water sewer pipes, etc. (as included in description of project) need to be insured for the total completed replacement value. Coverage should include perils of fire, theft, vandalism, windstorm/hail, collapse and transit, sewer backup, testing, equipment breakdown,
-

waterborne property. Coverage shall start when the items to be installed are transported to City premises and remain in place until the interest of the contractors ceases or the City accepts possession whichever comes first. Coverage should apply to owned property and non-owned property in the contractor's care, custody and control. The installation coverage forms shall provide coverage for building materials and supplies at the construction site, in transit to the site and similar property intended for the construction project at other locations as necessary or because of lack of storage space at the construction site. Coverage should apply on a Primary basis and should include a Waiver of Subrogation. Contractor should be responsible for any deductibles.

5. Policy Form:

- a) All policies required by this Contract, with the exception of Workers Compensation, or unless specific approval is given by the City, are to be written on an occurrence basis, shall name the City of Venice, its Elected Officials, Officers, Agents, Employees as additional insured as their interest may appear under this Contract. Insurer(s), with the exception of Workers Compensation, shall agree to waive all rights of subrogation against the City of Venice, its Elected Officials, Officers, Agents, and Employees.
 - b) Insurance requirements itemized in this Contract, and required of the Contractor, shall be provided 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.
 - c) Each insurance policy required by this Contract shall:
 - (1) apply separately to each insured against whom claim is made and suit is brought, except with respect to limits of the insurer's liability;
 - (2) be endorsed to state that coverage shall not be suspended, voided or canceled by either party except after thirty (30) calendar days prior written notice by certified mail, return receipt requested, has been given to the City of Venice's Director of Administrative Services.
 - d) The City shall retain the right to review, at any time, coverage form, and amount of insurance.
 - e) 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.
 - f) 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 any deductible and/or retention to which such policies are subject, whether or not the City is an insured under the policy. In the event that claims in excess of the insured amounts provided herein are filed by reason of operations under the contract, the amount excess of such claims, or any portion thereof, may be withheld from any payment due or to become due to the contractor until such time the contractor shall furnish additional security covering such claims as may be determined by the City.
 - g) Claims Made Policies will be accepted for professional and hazardous materials and
-

such other risks as are authorized by the City. 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 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.

- h) Certificates of Insurance evidencing Claims Made or Occurrence form coverage and conditions to this Contract, as well as the City's Bid Number and description of work, are to be furnished to the City's Director of Administrative Services, 401 West Venice Avenue, Venice, FL 34285, ten (10) business days prior to commencement of work and a minimum of thirty (30) calendar days prior to expiration of the insurance policy.
 - i) Notices of Accidents and Notices of Claims associated with work being performed under this Contract, shall be provided to the Contractor's insurance company and the City's Director of Administrative Services, as soon as practicable after notice to the insured.
 - j) All property losses shall be payable to, and adjusted with, the City.
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CONTRACTOR'S RELEASE OF LIEN

BEFORE ME, the undersigned authority in said County and State, appeared _____, who being first duly sworn, deposes and says that he is _____ of _____ a company and/or corporation authorized to do business under the laws of Florida, which is the contractor on Project known as City of Venice Bid # 3025-16, located in the City of Venice, County of Sarasota, Florida, under contract with the City of Venice, dated the _____ day of _____, 20____, that the said deponent is duly authorized to make this affidavit by resolution of the Board of Directors of said company and/or corporation; that deponent knows of his own knowledge that said contract has been complied with in every particular by said contractor and that all parts of the work have been approved by the City Engineer; that there are no bills remaining unpaid for labor, material or otherwise, in connection with said contract and work, and that there are no suits pending against the undersigned as contractor or anyone in connection with the work done and materials furnished or otherwise, under said contract.

DEPONENT further says that the final estimate which has been submitted to the City simultaneously with the making of this affidavit, constitutes all claims and demands against the City on account of said contract or otherwise, and that acceptance of the sum specified in said final estimate will operate as a full and final release and discharge of the City from any further claims, demands or compensation by contractor under the above contract.

DEPONENT further agrees that all guarantees under this contract shall start and be in full force from the date of this release as spelled out in the contract documents.

Signature: _____

Printed Name:

STATE OF FLORIDA)
COUNTY OF)

Signed before me this _____ day of _____, 20____,
by _____ who is personally known to me or has produced
_____ as identification.

Notary Public
My Commission Expires:
Commission Number:

WE, the _____, having heretofore executed a performance bond and a payment bond for the above named contractor covering project and section as described above in the sum of (\$ _____) _____ Dollars, hereby agree that the Owner may make full payment of the final estimate, including the retained percentage, to said contractor.

IT IS fully understood that the granting of the right to make the payment of the final estimate to said contractor and/or his assigns, shall in no way relieve this surety company of its

obligations under its bonds, as set forth in the specifications, contract, and bonds pertaining to the above project.

IN WITNESS WHEREOF, the _____ has caused this instrument to be executed on its behalf by its _____, and/or its duly authorized attorney in fact, and its corporate seal to be hereunto affixed, all on this _____ day of _____, A.D., 20__.

Surety Company

Attorney in Fact

Power of Attorney must be attached if executed by Attorney in Fact.

STATE OF)

COUNTY OF)

BEFORE ME, the undersigned authority, appeared _____, who is personally known to me or has produced _____ as identification, and who executed the foregoing instrument in the name of _____ as its _____ and the said _____ acknowledged that he executed said instrument in the name of _____ as its _____ and/or _____, for the purpose therein expressed and that he had due and legal authority to execute the same on behalf of said _____, a corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal at _____ this _____ day of _____, 20__.

Notary Public

My Commission Expires:

CERTIFICATE OF SUBSTANTIAL COMPLETION

PROJECT NO.
PROJECT:
CONTRACTOR CONTRACT DATE

CONTRACT FOR

Project or Specified Part Shall Include:
DEFINITION OF SUBSTANTIAL COMPLETION

The date of substantial completion of a project or specified part of a project is the date when the work is sufficiently completed, in accordance with the Contract Documents, so that the project or specified part of the project can be utilized for the purpose for which it was intended.

TO: (Contractor)
DATE OF SUBSTANTIAL COMPLETION: _____

The work performed under this contract has been inspected by authorized representatives of the City of Venice and the contractor, and the project or specified part of the project, is hereby declared to be substantially completed on the above date.

A tentative list of items to be completed or corrected is appended hereto. This list may not be exhaustive, and the failure to include an item on it does not alter the responsibility of the contractor to complete all the work in accordance with the contract documents. These items shall be completed by the contractor within _____ days of Substantial Completion.

The date of Substantial Completion is the date upon which all guarantees and warranties begin, except as noted below. The responsibilities between the Owner and the Contractor for maintenance shall be as set forth below.

CITY OF VENICE

By:
Date: _____

The contractor accepts the foregoing Certification of Substantial Completion and agrees to complete and correct the items on the tentative list within the time indicated.

Contractor Authorized Representative
Date: _____

RESPONSIBILITIES:
OWNER:
CONTRACTOR:
EXCEPTIONS AS TO GUARANTEES AND WARRANTIES:
ATTACHMENTS (Identify)

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BIDDER QUALIFICATION STATEMENT

(Completion of this statement is required in advance of
consideration for award of Contract.)

SUBMITTED TO:

City of Venice
401 West Venice Avenue
Venice, FL 34285

SUBMITTED FOR:

RO WTP High Service Pump Replacement

SUBMITTED BY:

Name of Organization: _____
(Print or Type Name of Bidder)

Name of Individual: _____

Title: _____

Business Address: _____

Telephone No.: _____

Fax No.: _____

E-mail Address: _____

Bidder's Website: _____

If address and phone number given above is for a branch office, provide address and phone number of principal home office:

Principal Home Office Address: _____

Principal Home Office Telephone No.: _____

Gentlemen:

The undersigned certifies under oath the truth and correctness of all statements and of all answers to questions made hereinafter.

(Note: Attach additional sheets as required.)

1.0 Bidder's General Business Information

1.1 Check if:

Corporation Partnership Joint Venture Other

Limited Liability Company Sole Proprietorship

If Corporation:

A. Date and State of Incorporation:

B. List of Executive Officers:

Name	Title	Address
_____	_____	_____
_____	_____	_____
_____	_____	_____

If Partnership:

A. Date and State of Organization:

B. Current General Partners (name and address for each):

C. Type of Partnership

General Publicly Traded Limited

Limited Liability Other (describe): _____

If Joint Venture:

A. Date and State of Organization:

B. Name, Address, Form of Organization, and State of Organization of Each Joint Venture Partner: (Indicate with an asterisk (*) the managing or controlling Joint Venturer if applicable):

If Limited Liability Company:

A. Date and State of Organization:

B. Members:

Name	Address
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If Sole Proprietorship:

A. Date and State of Organization:

B. Name and Address of Owner or Owners:

If Other Type of Organization:

A. Type of Organization: _____

B. Date and State of Organization:

C. Name and Address of Each Owner or Principal:

1.2 Certifications: In addition to the above categories of business entities, indicate whether Bidder's organization is a:

- Disadvantaged Business Enterprise, certified by _____
- Minority Business Enterprise, certified by _____
- Women's Business Enterprise, certified by _____
- Historically Underutilized Business Zone Small Business Concern, certified by _____

2.0 How many years has your organization been in business as a general contractor?

3.0 If your organizational structure has changed within the past five years, provide data as listed above in Item 1.0 for your previous organization.

4.0 Do you plan to subcontract any part of this project? _____ If so, give details.

- 5.0 Has any construction contract to which you have been a party been terminated by the owner; have you ever terminated work on a project prior to its completion for any reason; has any surety which issued a performance bond on your behalf ever completed the work in its own name or financed such completion on your behalf; has any surety expended any monies in connection with a contract for which they furnished a bond on your behalf? If the answer to any portion of this question is "yes", furnish details of all such occurrences including name of owner, architect or engineer, and surety, and name and date of project.
- 6.0 Has any officer or partner of your organization ever been an officer or partner of another organization that had any construction contract terminated by the owner; terminated work on a project prior to its completion for any reason; had any surety which issued a performance bond complete the work in its own name or financed such completion; or had any surety expend any monies in connection with a contract for which they furnished a bond? If the answer to any portion of this question is "yes", furnish details of all such occurrences including name of owner, architect or engineer, and surety, and name and date of project.
- 7.0 In the last five years, has your organization, or any predecessor organization, failed to substantially complete a project in a timely manner? If the answer to this question is "yes", furnish details of all such occurrences including name of owner, architect or engineer, and surety, and name and date of project.
- 8.0 On Schedule A, attached, list name, location and description of project, owner, architect or engineer, contract price, percent complete and scheduled completion of the major construction projects your organization has in progress on this date. Provide name, address and telephone number of a reference for each project listed.
- 9.0 On Schedule B, attached, list name, location and description of project, owner, architect or engineer, contract price, date of completion and percent of work with your own forces of major projects of the same general nature as this project which your organization has completed in the past five years. Provide name, address and telephone number of a reference for each project listed.

10.0 On Schedule C, attached, list name and construction experience of the principal individuals of your organization directly involved in construction operations.

11.0 Licenses and Registrations:

11.1 Indicate the jurisdictions in which your firm is legally qualified to practice. Indicate license or registration number for each jurisdiction, if applicable, and type of license or registration. Attach separate sheet as required.

Jurisdiction	License/Registration No.	Type
_____	_____	_____
_____	_____	_____
_____	_____	_____

11.2 In the past five years, has Bidder had any business or professional license suspended or revoked?

No Yes

If yes, describe on a separate attachment the circumstances, including the jurisdiction and bases for suspension or revocation.

12.0 Provide the following information for your surety:

12.1 Surety Company: _____

12.2 Agent: _____

A. Address: _____

B. Telephone No.: _____

13.0 Provide the following with respect to an accredited banking institution familiar with your organization.

13.1 Name of Bank: _____

13.2 Address: _____

13.3 Account Manager: _____

13.4 Telephone No.: _____

14.0 Provide the name, address and telephone number of an individual who represents a major equipment/material supplier whom the Owner may contact for a financial reference:

15.0 Industry Affiliations, Memberships, Awards, and Honors

15.1 List below the industry organizations with which your organization is affiliated or which your organization is a member:

15.2 List below the industry awards or honors received by your organization and the date for each. Attach supporting documentation as necessary.

16.0 Statement of Potential Conflicts of Interest: List below business associations, financial interests, or other circumstances that may create a conflict of interest with the Owner or other entity involved in the Project. Attach additional documentation as required.

17.0 Dated at _____, this _____ day of _____, 20__.

Bidder: _____
(Print or Type Name of Bidder)

By: _____

Title: _____

00 45 13-8

Attachments A, B and C

(Seal, if corporation)

------(Affidavit for Individual)-----

_____ being duly sworn, deposes and says that:

a) the financial statement, taken from his/her books, is a true and accurate statement of his/her financial condition as of the date thereof; and b) all of the foregoing qualification information is true, complete, and accurate.

------(Affidavit for Partnership)-----

_____ being duly sworn, deposes and says that:

a) he/she is a member of the partnership of _____;
b) he/she is familiar with the books of said partnership showing its financial condition;
c) the financial statement, taken from the books of said partnership, is a true and accurate statement of the financial condition of the partnership as of the date thereof; and d) all of the foregoing qualification information is true, complete, and accurate.

------(Affidavit for Corporation)-----

_____ being duly sworn, deposes and says that: a) he/she is
_____ of _____;
(Full name of Corporation)

b) he/she is familiar with the books of said corporation showing its financial condition;
c) the financial statement, taken from the books of said corporation, is a true and accurate statement of the financial condition of said corporation as of the date thereof; and d) that all of the foregoing qualification information is true, complete, and accurate.

------(Affidavit for Limited Liability Company (LLC))-----

_____ being duly sworn, deposes and says that: a) he/she is
_____ of _____;
(Full name of LLC)

b) he/she is familiar with the books of said company showing its financial condition; c) the financial statement, taken from the books of said company, is a true and accurate statement of the financial condition of said company as of the date thereof; and d) that all of the foregoing qualification information is true, complete, and accurate.

------(Affidavit for Joint Venture)-----

Each joint venturer shall complete the affidavit appropriate for the joint venturer's type of organization and attach said affidavit to the Bidder Qualifications Statement. Submit separate acknowledgement for each joint venturer's affidavit.

----- (Acknowledgment) -----

_____ being duly sworn, deposes and says
that he/she is _____ of _____;
(Name of Bidder)

that he/she is duly authorized to make the foregoing affidavit and that he/she makes it on behalf of

() himself/herself; () said partnership; () said corporation;

() said joint venture; () said limited liability company

Sworn to before me this _____ day of _____, 20____, in the County of _____, State of _____.

—

(Notary Public)

My commission expires _____

(Seal)

+ + END OF BIDDER QUALIFICATIONS STATEMENT + +

GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT

Adapted from EJCDC C-700, Standard General Conditions
of the Construction Contract (2007 Edition)

TABLE OF CONTENTS

	<u>Page</u>
ARTICLE 1 – DEFINITIONS AND TERMINOLOGY	00 72 13 - 7
1.01 <i>Defined Terms</i>	00 72 13 - 7
1.02 <i>Terminology</i>	00 72 13 - 11
ARTICLE 2 – PRELIMINARY MATTERS	00 72 13 - 13
2.01 <i>Delivery of Bonds and Evidence of Insurance</i>	00 72 13 - 13
2.02 <i>Copies of Documents</i>	00 72 13 - 13
2.03 <i>Commencement of Contract Times; Notice to Proceed</i>	00 72 13 - 13
2.04 <i>Starting the Work</i>	00 72 13 - 13
2.05 <i>Before Starting Construction</i>	00 72 13 - 14
2.06 <i>Preconstruction Conference</i>	00 72 13 - 14
2.07 <i>Initial Acceptance of Schedules</i>	00 72 13 - 14
ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE.....	00 72 13 - 15
3.01 <i>Intent</i>	00 72 13 - 15
3.02 <i>Reference Standards</i>	00 72 13 - 15
3.03 <i>Reporting and Resolving Discrepancies</i>	00 72 13 - 16
3.04 <i>Amending and Supplementing Contract Documents</i>	00 72 13 - 17
3.05 <i>Reuse of Documents</i>	00 72 13 - 17
3.06 <i>Electronic Data</i>	00 72 13 - 17
ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS	00 72 13 - 18
4.01 <i>Availability of Lands</i>	00 72 13 - 18
4.02 <i>Subsurface and Physical Conditions</i>	00 72 13 - 18
4.03 <i>Differing Subsurface or Physical Conditions</i>	00 72 13 - 19
4.04 <i>Underground Facilities</i>	00 72 13 - 20
4.05 <i>Reference Points</i>	00 72 13 - 21
4.06 <i>Hazardous Environmental Condition at Site</i>	00 72 13 - 22
ARTICLE 5 – BONDS AND INSURANCE	00 72 13 - 23
5.01 <i>Performance, Payment, and Other Bonds</i>	00 72 13 - 23
5.02 <i>Licensed Sureties and Insurers</i>	00 72 13 - 24
5.03 <i>Certificates of Insurance</i>	00 72 13 - 24
5.04 <i>Contractor's Liability Insurance</i>	00 72 13 - 25
5.05 <i>Owner's Liability Insurance</i>	00 72 13 - 26
5.06 <i>Property Insurance</i>	00 72 13 - 26
5.07 <i>Waiver of Rights</i>	00 72 13 - 26
5.08 <i>Receipt and Application of Insurance Proceeds</i>	00 72 13 - 26
5.09 <i>Acceptance of Bonds and Insurance; Option to Replace</i>	00 72 13 - 26
5.10 <i>Partial Utilization Acknowledgment of Property Insurer</i>	00 72 13 - 27

TABLE OF CONTENTS (Continued)

	<u>Page</u>
ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES	00 72 13 - 27
6.01 <i>Supervision and Superintendence</i>	00 72 13 - 27
6.02 <i>Labor; Working Hours</i>	00 72 13 - 27
6.03 <i>Services, Materials, and Equipment</i>	00 72 13 - 28
6.04 <i>Progress Schedule</i>	00 72 13 - 28
6.05 <i>Substitutes and "Or-Equals"</i>	00 72 13 - 28
6.06 <i>Concerning Subcontractors, Suppliers, and Others</i>	00 72 13 - 31
6.07 <i>Patent Fees and Royalties</i>	00 72 13 - 33
6.08 <i>Permits</i>	00 72 13 - 33
6.09 <i>Laws and Regulations</i>	00 72 13 - 33
6.10 <i>Taxes</i>	00 72 13 - 34
6.11 <i>Use of Site and Other Areas</i>	00 72 13 - 34
6.12 <i>Record Documents</i>	00 72 13 - 35
6.13 <i>Safety and Protection</i>	00 72 13 - 35
6.14 <i>Safety Representative</i>	00 72 13 - 36
6.15 <i>Hazard Communication Programs</i>	00 72 13 - 36
6.16 <i>Emergencies</i>	00 72 13 - 36
6.17 <i>Shop Drawings and Samples</i>	00 72 13 - 37
6.18 <i>Continuing the Work</i>	00 72 13 - 39
6.19 <i>Contractor's General Warranty and Guarantee</i>	00 72 13 - 39
6.20 <i>Indemnification</i>	00 72 13 - 40
6.21 <i>Delegation of Professional Design Services</i>	00 72 13 - 40
 ARTICLE 7 – OTHER WORK AT THE SITE	 00 72 13 - 41
7.01 <i>Related Work at Site</i>	00 72 13 - 41
7.02 <i>Legal Relationships</i>	00 72 13 - 42
 ARTICLE 8 – OWNER’S RESPONSIBILITIES	 00 72 13 - 42
8.01 <i>Communications to Contractor</i>	00 72 13 - 42
8.02 <i>Furnish Data</i>	00 72 13 - 42
8.03 <i>Pay When Due</i>	00 72 13 - 43
8.04 <i>Lands and Easements; Reports and Tests</i>	00 72 13 - 43
8.05 <i>Insurance</i>	00 72 13 - 43
8.06 <i>Change Orders</i>	00 72 13 - 43
8.07 <i>Inspections, Tests, and Approvals</i>	00 72 13 - 43
8.08 <i>Limitations on Owner's Responsibilities</i>	00 72 13 - 43
8.09 <i>Undisclosed Hazardous Environmental Condition</i>	00 72 13 - 43
8.10 <i>Evidence of Financial Arrangements</i>	00 72 13 - 43
8.11 <i>Compliance With Safety Programs</i>	00 72 13 - 44

TABLE OF CONTENTS (Continued)

ARTICLE 9 – ENGINEER’S STATUS DURING CONSTRUCTION	00 72 13 - 44
9.01 <i>Owner’s Representative</i>	00 72 13 - 44
9.02 <i>Visits to Site</i>	00 72 13 - 44
9.03 <i>Project Representative</i>	00 72 13 - 45
9.04 <i>Authorized Variations in Work</i>	00 72 13 - 45
9.05 <i>Rejecting Defective Work</i>	00 72 13 - 45
9.06 <i>Shop Drawings, Change Orders and Payments</i>	00 72 13 - 45
9.07 <i>Determinations for Unit Price Work</i>	00 72 13 - 46
9.08 <i>Decisions on Requirements of Contract Documents, and Acceptability of Work</i>	00 72 13 - 46
9.09 <i>Limitations on Engineer's Authority and Responsibilities</i>	00 72 13 - 46
9.10 <i>Compliance with Safety Programs</i>	00 72 13 - 47
 ARTICLE 10 – CHANGES IN THE WORK; CLAIMS	 00 72 13 - 47
10.01 <i>Authorized Changes in the Work</i>	00 72 13 - 47
10.02 <i>Unauthorized Changes in the Work</i>	00 72 13 - 47
10.03 <i>Execution of Change Orders</i>	00 72 13 - 48
10.04 <i>Notification to Surety</i>	00 72 13 - 48
10.05 <i>Claims</i>	00 72 13 - 48
 ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK	00 72 13 - 49
11.01 <i>Cost of the Work</i>	00 72 13 - 49
11.02 <i>Allowances</i>	00 72 13 - 52
11.03 <i>Unit Price Work</i>	00 72 13 - 53
 ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES	 00 72 13 - 54
12.01 <i>Change of Contract Price</i>	00 72 13 - 54
12.02 <i>Change of Contract Times</i>	00 72 13 - 55
12.03 <i>Delays</i>	00 72 13 - 55
 ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK.....	 00 72 13 - 56
13.01 <i>Notice of Defects</i>	00 72 13 - 56
13.02 <i>Access to Work</i>	00 72 13 - 56
13.03 <i>Tests and Inspections</i>	00 72 13 - 56
13.04 <i>Uncovering Work</i>	00 72 13 - 57
13.05 <i>Owner May Stop the Work</i>	00 72 13 - 58
13.06 <i>Correction or Removal of Defective Work</i>	00 72 13 - 58
13.07 <i>Correction Period</i>	00 72 13 - 58
13.08 <i>Acceptance of Defective Work</i>	00 72 13 - 59
13.09 <i>Owner May Correct Defective Work</i>	00 72 13 - 60

TABLE OF CONTENTS (Continued)

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION.....	00 72 13 - 60
14.01 <i>Schedule of Values</i>	00 72 13 - 60
14.02 <i>Progress Payments</i>	00 72 13 - 61
14.03 <i>Contractor’s Warranty of Title</i>	00 72 13 - 64
14.04 <i>Substantial Completion</i>	00 72 13 - 64
14.05 <i>Partial Utilization</i>	00 72 13 - 65
14.06 <i>Final Inspection</i>	00 72 13 - 65
14.07 <i>Final Payment</i>	00 72 13 - 66
14.08 <i>Final Completion Delayed</i>	00 72 13 - 67
14.09 <i>Waiver of Claims</i>	00 72 13 - 67
ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION	00 72 13 - 68
15.01 <i>Owner May Suspend Work</i>	00 72 13 - 68
15.02 <i>Owner May Terminate for Cause</i>	00 72 13 - 68
15.03 <i>Owner May Terminate For Convenience</i>	00 72 13 - 69
15.04 <i>Contractor May Stop Work or Terminate</i>	00 72 13 - 70
ARTICLE 16 – DISPUTE RESOLUTION.....	00 72 13 - 70
16.01 <i>Methods and Procedures</i>	00 72 13 - 70
ARTICLE 17 – MISCELLANEOUS.....	00 72 13 - 70
17.01 <i>Giving Notice</i>	00 72 13 - 70
17.02 <i>Computation of Times</i>	00 72 13 - 71
17.03 <i>Cumulative Remedies</i>	00 72 13 - 71
17.04 <i>Survival of Obligations</i>	00 72 13 - 71
17.05 <i>Controlling Law</i>	00 72 13 - 71
17.06 <i>Headings</i>	00 72 13 - 71

GENERAL CONDITIONS

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda* – Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement* – The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
 3. *Application for Payment* – The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Asbestos* – Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. *Bid* – The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. *Bidder* – The individual or entity who submits a Bid directly to Owner.
 7. *Bidding Documents* – The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. *Bidding Requirements* – The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. *Change Order* – A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim* – A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
11. *Contract* – The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.
12. *Contract Documents* – Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor’s submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price* – The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times* – The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer’s written recommendation of final payment.
15. *Contractor* or *CONTRACTOR* – The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work* – See Paragraph 11.01.A for definition.
17. *Drawings* – That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement* – The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer* or *ENGINEER* – The individual or entity named as such in the Agreement.
20. *Field Order* – A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements* – Sections of Division 01 of the Specifications.

22. *Hazardous Environmental Condition* – The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste* – The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations* – Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens* – Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone* – A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.
27. *Notice of Award* – The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed* – A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. *Owner or OWNER* – The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs* – Polychlorinated biphenyls.
31. *Petroleum* – Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule* – A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. *Project* – The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual* – The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material* – Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative* – The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples* – Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals* – A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *Schedule of Values* – A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
40. *Shop Drawings* – All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *Site* – Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications* – That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *Subcontractor* – An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
44. *Substantial Completion* – The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and

“substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.

45. *Successful Bidder* – The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions* – That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier* – A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
48. *Underground Facilities* – All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work* – Work to be paid for on the basis of unit prices.
50. *Work* – The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive* – A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 *Terminology*

- A. The words and terms referenced in this Paragraph 1.02 are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives*

1. The Contract Documents include the terms “as allowed”, “as approved”, “as ordered”, “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents, or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times

commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
1. a preliminary Progress Schedule;
 2. a preliminary Schedule of Submittals; and
 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference; Designation of Authorized Representative*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve

Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 Intent

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 Reference Standards

- A. Standards, Specifications, Codes, Laws, and Regulations
 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants or subcontractors any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the

provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. Reporting Discrepancies

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers or has actual knowledge of and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and
 - a) any applicable Law or Regulation,
 - b) any standard, specification, manual or code, or,
 - c) any instruction of any Supplierthen Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the

Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
 - 1. a Field Order;
 - 2. Engineer's approval of a Shop Drawing or Sample; (subject to the provisions of Paragraph 6.17.D.3); or
 - 3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or
 - 2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor or by Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS;
HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 Availability of Lands

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.
- B. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 Subsurface and Physical Conditions

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site; that Engineer has used in preparing the Contract Documents; and
 - 2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely on the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical

data,” Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
3. any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions, or information.

4.03 Differing Subsurface or Physical Conditions

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

1. is of such a nature as to establish that any “technical data” on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
2. is of such a nature as to require a change in the Contract Documents; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer’s Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner’s obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer’s findings and conclusions.

C. *Possible Price and Times Adjustments*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the

extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
- a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

- A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data,
 - b. locating all Underground Facilities shown or indicated in the Contract Documents,
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.
- B. *Not Shown or Indicated*
1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
 2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the

Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.,
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the “technical data” contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such “technical data” is identified in the Supplementary Conditions. Except for such reliance on such “technical data,” Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants or subcontractors with respect to:
 - 1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall

- promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.
- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice:: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
 - F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
 - G. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's sole negligence.
 - H. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 Performance, Payment, and Other Bonds

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all

of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 Licensed Sureties and Insurers

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 Certificates of Insurance

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full

compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Liability Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
 - 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 - 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
6. include completed operations insurance;
 - a. such insurance shall remain in effect for at least two years after final payment, and
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 Owner's Liability Insurance

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 (Not Used)

5.07 (Not Used)

5.08 (Not Used)

5.09 (Not Used)

5.10 Acceptance of Bonds and Insurance; Option to Replace

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

6.01 Supervision and Superintendence

- A. Contractor shall supervise, inspect, and direct the Work competently 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. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. Unless the Owner shall otherwise agree in writing, the superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or

received from the superintendent shall be binding on Contractor.

6.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract

Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

- 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics; and
- 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and
- 3) it has a proven record of performance and availability of responsive service; and

b. Contractor certifies that, if approved and incorporated into the Work:

- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
- 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
 - 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and

- b) available engineering, sales, maintenance, repair, and replacement services; and
 - 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 Concerning Subcontractors, Suppliers, and Others

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other

individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.
- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
 - 2. shall anything in the Contract Documents create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to

an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

- A. *Limitation on Use of Site and Other Areas*
 - 1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
 - 2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute

resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work, Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
 - D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 Record Documents

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 Safety and Protection

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons and property in the performance of their work nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;
 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 3. 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.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs that are applicable to the Work.
- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety programs with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site

whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings*

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples*

- a. Submit number of Samples specified in the Specifications.
- b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials offered with respect to indicated use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques,

sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective for a minimum period of one (1) year. Engineer and its officers, directors, members, partners, employees, agents, consultants and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the

Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;
2. recommendation by Engineer or payment by Owner of any progress or final payment;
3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
4. use or occupancy of the Work or any part thereof by Owner;
5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
6. any inspection, test, or approval by others; or
7. any correction of defective Work by Owner.

6.20 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage:
 1. is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of real or personal property (other than the Work itself), including the loss of use resulting therefrom; and
 2. is caused by any act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws or Regulations.
- B. In any and all claims against Owner or Engineer or any of their , officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor,

- any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not be limited in any way by the amount or types of insurance provided by Contractor under Article 5 of the General Conditions.
 - D. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the sole negligence or willful misconduct of Owner or Engineer or of the officers, directors, members, partners, employees, agents, and consultants and subcontractors of each and any of them.

6.21 Delegation of Professional Design Services

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 Related Work at Site

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, Contractor may cut or alter the work of others with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 Legal Relationships

- A. Paragraph 7.01.A is not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 Communications to Contractor

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 Furnish Data

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.03 Pay When Due

- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.04 Lands and Easements; Reports and Tests

- A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at or contiguous to the Site.

8.05 Insurance

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.06 *Change Orders*

- A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.07 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.08 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.09 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.10 *Evidence of Financial Arrangements*

- A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

8.11 *Compliance With Safety Programs*

- A. While on the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.B.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

9.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, or have control over Contractor's Work, nor shall Engineer have authority over or responsibility for the means, methods, techniques, sequences, or procedures of construction selected by Contractor, for safety precautions and programs incident to Contractor's Work in progress, nor for any failure of Contractor to comply with Laws and Regulations applicable to Contractor's furnishing and performing the Work.

9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both,

and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 Rejecting Defective Work

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 Shop Drawings, Change Orders and Payments

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, if any,
 - 1. as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21;
 - 2. as to Change Orders, see Articles 10, 11, and 12; and
 - 3. as to Applications for Payment, see Article 14.

9.07 Determinations for Unit Price Work

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 Decisions on Requirements of Contract Documents and Acceptability of Work

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.

- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 Limitations on Engineer's Authority and Responsibilities

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Programs*

- A. While on the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of the Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.C.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
 - 1. changes in the Work which are:
 - a) ordered by Owner pursuant to Paragraph 10.01.A,
 - b) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or
 - c) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).
- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any,

take one of the following actions in writing:

1. deny the Claim in whole or in part,
 2. approve the Claim, or
 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and

holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which

Contractor is liable, imposed by Laws and Regulations.

- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.
- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 *Allowances*

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances*
1. Contractor agrees that:
 - a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. *Contingency Allowance*
1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment

in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).
- C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.
- C. If Owner, Engineer, or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- D. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of other contractors or utility owners, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.D.

- E. Owner and Engineer and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE
OF DEFECTIVE WORK

13.01 *Notice of Defects*

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and
 - 3. as otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other

representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall if requested by Engineer, uncover such Work for observation.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or

extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. repair such defective land or areas; or
 - 2. correct such defective Work; or
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work,

to the work of others or other land or areas resulting therefrom.

- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.
- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. Applications for Payments

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated in the Contract.

B. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents

(subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and

- c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in

Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. *Reduction in Payment*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not

justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.
 1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.
 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that:
 - a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and
 - b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations

under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 - 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 - 3. Contractor's disregard of the authority of Engineer; or
 - 4. Contractor's repeated violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
 - 1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 - 2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
 - 3. complete the Work as Owner may deem expedient.

- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated

contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.
- 15.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

- A. Dispute resolution methods and procedures, if any, shall be as set forth in the Supplementary Conditions. If no method and procedure has been set forth, and subject to the provisions of Paragraph 10.05, Owner and Contractor may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

ARTICLE 17 – MISCELLANEOUS

17.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or
2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

- A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

+ + END OF GENERAL CONDITIONS + +

SUPPLEMENTARY CONDITIONS

SCOPE

These Supplementary Conditions amend or supplement the General Conditions of the Construction Contract. All provisions of the General Conditions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions which are defined in the General Conditions have the meanings assigned to them in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to the singular and plural thereof.

The address system used in these Supplementary Conditions conforms to the address system used in the General Conditions, with the prefix "SC" added thereto.

SC-1.01.A.36 Change the definition of *Resident Project Representative* to read as follows:

SC-1.01.A.36 *Resident Project Representative*: The Owner's representative who will provide day to day inspection services of construction activities.

SC-1.01.A.51 Change the last sentence in the definition of *Work Change Directive* to read as follows:

“A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued IFCA or Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.”

SC-1.01.A.52 Add the following definition:

1.01.A.52 *Interim Field Change Agreement (IFCA)* - A document signed by the Engineer, Contractor, Owner and Owner's Representative documenting a change to the Work, which does not result in the total contract price exceeding the amount specified in the contract. An IFCA will authorize re-distribution of existing contract amounts or use of Owner's Allowance funds.

SC-4.03, A. Change the last paragraph to read as follows:

“then Contractor shall, within seven (7) days after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in

connection therewith (except as aforesaid) until receipt of written order to do so.

SC-4.06 Delete Paragraphs 4.06.A and 4.06.B in their entirety and insert the following:

SC-4.06.A. In the preparation of the Drawings and Specifications, Engineer has not utilized any report or drawing related to a Hazardous Environmental Condition identified at the Site.

SC-4.06.B (Not Used)

SC- Article 5 Replace the entire article with the following:

Before performing any work, the Contractor shall procure and maintain, during the life of the Contract, insurance listed below. The policies of insurance shall be primary and written on forms acceptable to the Owner and placed with insurance carriers approved and licensed by the Insurance Department in the State of Florida and meet a minimum financial AM Best and Company rating of no less than A:VII. No changes are to be made to these specifications without prior written specific approval by the City.

1. The City of Venice is to be specifically included as an **ADDITIONAL INSURED**.
2. The City of Venice shall be named as Certificate Holder. *Please Note that the Certificate Holder should read as follows:*

The City of Venice 401
W. Venice Avenue
Venice, FL 34285

No City Division, Department, or individual name should appear on the certificate.
NO OTHER FORMAT WILL BE ACCEPTABLE.

3. The "Acord" certification of insurance form shall be used.
4. Required Coverage
 - a) **Commercial General Liability**: including but not limited to bodily injury, property damage, contractual liability, products and completed operations, and personal injury with limits of not less than \$ 1,000,000 per occurrence, \$ 1,000,000 aggregate covering all work performed under this Contract. Include broad form property damage (provide insurance for damage to property under the care custody and control of the contractor)
 - b) **Business Auto Policy**: including bodily injury and property damage for all vehicles owned, leased, hired and non-owned vehicles with limits of not less than \$1,000,000 combined single limit covering all work performed under this Contract.

- c) **Workers Compensation:** Contractor will provide Workers Compensation Insurance on behalf of all employees, including sub-contractors, who are to provide a service under this Contract, as required under Florida Law, Chapter 440, and Employers Liability with limits of not less than \$100,000 per employee per accident; \$500,000 disease aggregate; and \$100,000 per employee per disease.

- d) **Installation Floater/Installation Builders' Risk-Property Coverage:** Policy to cover direct physical loss or damage to materials, supplies, machinery, and equipment being installed, constructed or rigged by the contractor in conjunction with its installation or construction. All items involved in the project including drainage/water sewer pipes, etc. (as included in description of project) need to be insured for the total completed replacement value. Coverage should include perils of fire, theft, vandalism, windstorm/hail, collapse and transit, sewer backup, testing, equipment breakdown, waterborne property. Coverage shall start when the items to be installed are transported to Owner premises and remain in place until the interest of the contractors ceases or the Owner accepts possession whichever comes first. Coverage should apply to owned property and non-owned property in the contractor's care, custody and control. The installation coverage forms shall provide coverage for building materials and supplies at the construction site, in transit to the site and similar property intended for the construction project at other locations as necessary or because of lack of storage space at the construction site. Coverage should apply on a Primary basis and should include a Waiver of Subrogation. Contractor should be responsible for any deductibles.

5. Policy Form:

- a) All policies required by this Contract, with the exception of Workers Compensation, or unless specific approval is given by the Owner, are to be written on an occurrence basis, shall name the City of Venice, its Elected Officials, Officers, Agents, Employees as additional insured as their interest may appear under this Contract. Insurer(s), with the exception of Workers Compensation, shall agree to waive all rights of subrogation against the City of Venice, its Elected Officials, Officers, Agents, and Employees.

- b) Insurance requirements itemized in this Contract, and required of the Contractor, shall be provided 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.

- c) Each insurance policy required by this Contract shall:
 - (1) apply separately to each insured against whom claim is made and suit is brought, except with respect to limits of the insurer's liability;

- (2) be endorsed to state that coverage shall not be suspended, voided or canceled by either party except after thirty (30) calendar days prior written notice by certified mail, return receipt requested, has been given to the City of Venice's Director of Administrative Services.
- d) The Owner shall retain the right to review, at any time, coverage form, and amount of insurance.
 - e) 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.
 - f) 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 any deductible and/or retention to which such policies are subject, whether or not the Owner is an insured under the policy. In the event that claims in excess of the insured amounts provided herein are filed by reason of operations under the contract, the amount excess of such claims, or any portion thereof, may be withheld from any payment due or to become due to the Contractor until such time the contractor shall furnish additional security covering such claims as may be determined by the Owner.
 - g) Claims Made Policies will be accepted for professional and hazardous materials and such other risks as are authorized by the Owner. 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 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.
 - h) Certificates of Insurance evidencing Claims Made or Occurrence form coverage and conditions to this Contract, as well as the Owner's Bid Number and description of work, are to be furnished to the City's Director of Administrative Services, 401 West Venice Avenue, Venice, FL 34285, ten
(10) business days prior to commencement of work and a minimum of thirty (30) calendar days prior to expiration of the insurance policy.
 - i) Notices of Accidents and Notices of Claims associated with work being performed under this Contract, shall be provided to the Contractor's insurance company and the City's Director of Administrative Services, as soon as practicable after notice to the insured.
 - j) All property losses shall be payable to, and adjusted with, the City.

SC-6.02.B Add new paragraphs immediately after Paragraph 6.02.B that are to read as follows:

SC-6.02.B.1 If it shall become absolutely necessary to perform Work at night or on Saturdays, Sundays, or legal holidays, written notice shall be submitted to Owner and Engineer at least 5 days in advance of the need for such Work. Owner will only consider the performance of such Work as can be performed satisfactorily under the conditions. Good lighting and all other necessary facilities for carrying out and observing the Work shall be provided and maintained where such Work is being performed at night.

SC-6.02.B.2 If Owner authorizes Work during other than regular working hours, Contractor shall reimburse Owner for all Owner's additional costs associated with such Work, including, but not necessarily limited to, the overtime costs for Owner's, Engineer's, and Resident Project Representative's personnel on the Site and other additional costs assessed against or incurred by the Owner. At Owner's option, such additional costs may either be deducted from Contractor's progress payments or deducted from the retained amount prior to release following Substantial Completion.

SC-6.07.B Change the first sentence of Paragraph 6.07.B by replacing the term "Owner and Engineer" with the term "Owner, Engineer, and Resident Project Representative".

SC-6.11.A.3. Change the first sentence of Paragraph 6.11.A.3. by replacing the term "Owner and Engineer" with the term "Owner, Engineer, and Resident Project Representative".

SC-6.12 Add a new paragraph immediately after Paragraph 6.12.A, that is to read as follows:

SC-6.12.B Contractor will be required to review with Engineer the status of record documents in connection with the Engineer's review of an Application for Payment. Failure to maintain record documents current may be just cause for Engineer to recommend withholding of payments for Work performed.

SC-6.15 Add a new paragraph immediately after Paragraph 6.15.A that is to read as follows:

SC-6.15.B Contractor shall be responsible for coordinating exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with all Laws and Regulations. Contractor shall provide a centralized location for the maintenance of the material safety data sheets or other hazard communication information required to be made available by any

employer on the Site. Location of the material safety data sheets or other hazard communication information shall be readily accessible to the employees of employers on the Site.

SC-6.17 Add the following new paragraphs immediately after Paragraph 6.17.E that are to read as follows:

SC-6.17.F Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval or acceptance of submittal with no more than two (2) submittals (initial submittal plus one re-submittal). Engineer will record Engineer's time for reviewing subsequent submittals of Shop Drawings, Samples, or other submittals or items requiring approval or acceptance, and Contractor shall reimburse Owner for Engineer's charges for such time.

SC-6.19.A Supplement Paragraph 6.19.A by adding, after the term, "Engineer" in the second sentence, the term "and Resident Project Representative".

SC-6.19.C.1. Supplement Paragraph 6.19.C.1. by adding, after the term, "Engineer" the term "or Resident Project Representative".

SC-6.20.A. Change the first sentence of Paragraph 6.20.A by replacing the term "Owner and Engineer" in the first sentence, with the term " , Owner, Engineer, and Resident Project Representative".

SC-6.20.B Change the first sentence of Paragraph 6.20.B by replacing the term "Owner or Engineer" with the term "Owner, Engineer or Resident Project Representative".

SC-7.03 Add a new paragraph immediately after Paragraph 7.02 that is to read as follows:

SC-7.03 Separate Contractor Claims

A. Should Contractor cause damage to the work or property of another contractor at the Site, or should any claim arising out of Contractor's performance of the Work at the Site be made by any other contractor against Contractor, Owner or Engineer or Resident Project Representative, Contractor, without involving any other party, shall either:

1. remedy the damage,
2. agree to compensate the other contractor for remedy of the damage,
or
3. remedy the damage and attempt to settle with such other contractor by agreement, or otherwise resolve the dispute by arbitration or at law.

- B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner, Engineer, Resident Project Representative, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to, all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising directly, indirectly, or consequentially out of or relating to any claim or action, legal or equitable, brought by any other contractor against Owner or Engineer or Resident Project Representative to the extent said claim is based upon Contractor's performance of the Work.
- C. Should another contractor cause damage to the Work or property of Contractor at the Site or should the performance of work by any other contractor at the Site give rise to any other claim, Contractor shall not institute any action, legal or equitable, against Owner or Engineer or Resident Project Representative, or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Owner or Engineer or Resident Project Representative on account of any such damage or claim.
- D. If Contractor is delayed at any time in performing or furnishing Work by any act or neglect of another contractor and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a Claim therefore in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner or Engineer or Resident Project Representative for any delay, disruption, interference, or hindrance caused by any other contractor.

SC-8.01.A. Amend paragraph 8.01.A. by adding after the term "Engineer" to words "or Resident Project Representative".

SC-9.03 Add a new paragraph immediately after Paragraph 9.03.A that is to read as follows:

SC-9.03.B Resident Project Representative (RPR) will be Owner's employee or agent at the Site, will act as directed by and under the supervision of the Owner, and will confer with the Owner and Engineer regarding RPR's actions. RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor keeping Owner advised as necessary. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner with the knowledge of the Engineer.

1. Duties and Responsibilities of RPR:
 - a. Schedules: Review the Progress Schedule, Schedule of Submittals, and Schedule of Values prepared by Contractor and consult with Owner and Engineer concerning acceptability.
 - b. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.
 - c. Liaison:
 - 1) Serve as Owner's and Engineer's liaison with Contractor, working principally through Contractor's superintendent, and assist in providing understanding of the intent of the Contract Documents as directed by the Engineer.
 - 2) Assist in obtaining from Owner or Engineer additional details or information, when required for proper execution of the Work.
 - d. Shop Drawings and Samples:
 - 1) Record date of receipt of Shop Drawings and Samples, that are received at the Site.
 - 2) Receive Samples that are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.
 - 3) Advise Engineer and Contractor of the commencement of any Work requiring a Shop Drawing or Sample if the submittal has not been approved by Engineer.
 - e. Review of Work, Rejection of Defective Work, Inspections and Tests:
 - 1) Conduct observations of the Work in progress on the Site to assist Engineer in determining if the Work is, in general, proceeding in accordance with the Contract Documents.
 - 2) Report to Engineer when RPR believes that any Work is unsatisfactory, faulty, or defective or does not conform generally to the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test, or approval required to be made; and advise Engineer of Work that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection, or approval.
 - 3) Verify that tests, equipment, and systems startups, and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof; and observe, record, and report to Engineer appropriate details relative to the test procedures and startups.
 - 4) Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections and report to Engineer.

- f. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.
- g. Modifications: Consider and evaluate Contractor's suggestions for modifications to Drawings or Specifications and report with RPR's recommendations to Engineer. Transmit to Contractor decisions issued by Engineer.
- h. Records:
 - 1) Maintain at the Site orderly files for correspondence, reports of job conferences, Shop Drawings and Samples, and reproductions of original Contract Documents including all Addenda, Change Orders, Work Change Directives, Field Orders, additional Drawings issued subsequent to the execution of the Agreement, Engineer's clarifications and interpretations of the Contract Documents, progress reports, and other Project-related documents.
 - 2) Keep a record recording Contractor's hours, personnel and equipment on the Site, weather conditions, data relative to questions on Change Orders or changed conditions, list of visitors to the Site, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.
 - 3) Record names, addresses, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
- i. Reports:
 - 1) Furnish Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and Schedule of Submittals.
 - 2) Consult with Engineer in advance of scheduled major tests, inspections, or start of important phases of the Work.
 - 3) Report immediately to Engineer and Owner upon the occurrence of any Site accident, any Hazardous Environmental Condition, emergencies or acts of God endangering the Work, or property damage by fire or other cause.
- j. Payment Requests: Review Applications for Payment with Contractor for compliance with the established procedure for their submission, and submit recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.
- k. Certificates, Maintenance and Operation Manuals: During the course of the Work, verify that certificates, maintenance and operation manuals, and other data required by the Specifications to be assembled and furnished by Contractor are applicable to the items actually

installed and in accordance with the Contract Documents, and have this material delivered to Engineer for review and forwarding to Owner prior to final payment for the Work.

1. Completion:
 - 1) Before Engineer issues a certificate of Substantial Completion, submit to Contractor a list of observed items requiring completion or correction.
 - 2) Observe whether Contractor has arranged for inspections required by Laws and Regulations, including but not limited to those to be performed by public authorities having jurisdiction over the Work.
 - 3) Conduct final inspection in the company of Engineer, Owner, and Contractor, and prepare a final list of items to be completed or corrected.
 - 4) Observe that all items on final list have been completed or corrected and make recommendations to Engineer concerning acceptance of the Work.
2. The RPR shall not:
 - a. Authorize any deviation from the Contract Documents or substitution of materials or equipment, including “or equal” items.
 - b. Exceed limitations of Engineer’s authority as set forth in the Contract Documents.
 - c. Undertake any of the responsibilities of Contractor, Subcontractors, or Contractor’s superintendent.
 - d. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction, unless such advice or directions are specifically required by the Contract Documents.
 - e. Advise on, issue directions regarding, or assume control over safety precautions and programs in connection with the Work.
 - f. Accept Shop Drawing or Sample submittals from anyone other than Contractor.
 - g. Authorize Owner to occupy the Project in whole or in part.
 - h. Participate in specialized field or laboratory tests or inspections conducted by others except as specifically authorized by Engineer.

SC-9.08.A Change “30 days” in the last sentence to read “10 days”.

SC-10.05.B Delete paragraph B in its entirety and replace with the following:.

Notice: Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 10 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 30 days after

the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

- SC-12.01.C Delete the semicolon at the end of GC 12.01.C.2.c, and add the following:
- provided, however, that on any subcontracted work the total maximum fee to be paid by Owner to Contractor under this Paragraph shall be no greater than 27 percent of the costs incurred by the Subcontractor who actually performs the work;
- SC-12.03.C. Change the first sentence of Paragraph 12.03.C by replacing the term "Owner and Engineer" in the first sentence, with the term "Owner, Engineer, and Resident Project Representative".
- SC-12.03.E. Change the first sentence of Paragraph 12.03.E by replacing the term "Owner and Engineer" in the first sentence, with the term "Owner, Engineer, and Resident Project Representative".
- SC-13.01.A. Change the first sentence of Paragraph 13.01.A. by replacing the term "Owner or Engineer" with the term "Owner, Engineer, or Resident Project Representative".
- SC-13.03.A. Change the first sentence of Paragraph 13.03.A. by replacing the term "Engineer" with the term "Engineer and Resident Project Representative".
- SC-13.03.B. Delete Paragraph 13.03.B. and subparagraphs in their entirety and replace with the following:
- B. Contractor shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents.
- SC-13.04.A. Delete Paragraph 13.04.A. in its entirety and replace with the following:
- A. If any Work is covered contrary to the written request of Engineer or Resident Project Representative, it must, if requested by Engineer or Resident Project Representative, be uncovered for Engineer's or Resident Project Representative's observation and replaced at Contractor's expense.

SC-13.04.D. Change the words “If, the uncovered work is not found to be defective,” to read “Unless the Contractor was provided with prior written request not to cover the work, if the uncovered work is not found to be defective,”.

SC-14.02.A Add new paragraphs immediately after Paragraph 14.02.A.3 that are to read as follows:

SC-14.02.A.4. Owner shall make monthly progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment as recommended by Engineer. Contractor's Applications for Payment will be due within 7 days after the last day of each month during performance of the Work. All progress payments will be on the basis of the progress of the Work measured by the Schedule of Values provided for in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work, based on the number of units completed) or, in the event there is no Schedule of Values, as provided in the General Requirements. A progress payment will not be made whenever the value of the Work completed since the last previous progress payment is less than \$5,000.

1. Prior to Substantial Completion

- a. Progress payments will be made in the amount of up to 90 percent of the Work completed, (with the balance being retainage), less the aggregate of payments previously made and less such amounts as Engineer shall determine, or Owner may withhold, in accordance with Paragraph 14.02 of the General Conditions; and
- b. 90 percent of the cost of materials and equipment not incorporated in the Work but suitably stored (with the balance being retainage).

2. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

SC-14.02.C. Replace the existing paragraph with the following:

All payments to Contractor shall be made in accordance with Florida's Local Government Prompt Payment Act.

SC-14.04.B. Change the terms “Owner, Contractor and Engineer” to read “Owner, Contractor, Engineer and Resident Project Representative”.

SC-14.07.C. Replace the existing paragraph with the following:

All payments to Contractor shall be made in accordance with Florida's Local Government Prompt Payment Act.

SC-16.01 Add new paragraphs immediately after Paragraph 16.01.A that are to read as follows:

SC-16.01.B Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

SC-16.01.C Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

SC-16.01.D If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor,

1. elects in writing to demand arbitration of the Claim, pursuant to Paragraph SC-16.02, or
2. agrees with the other party to submit the Claim to another dispute resolution process.

SC-16.02 Add a new paragraph immediately after Paragraph 16.01 that is to read as follows:

SC-16.02 *Arbitration*

- A. All Claims or counter claims, disputes, or other matters in question between Owner and Contractor arising out of or relating to the Contract Documents or the breach thereof (except for Claims that have been waived by the making or acceptance of final payment as provided by Paragraph 14.09), including but not limited to those not resolved under the provisions of Paragraph SC-16.01.B and SC-16.01.C will be decided by arbitration in accordance with Construction Industry Arbitration Rules of the American Arbitration Association, subject to the conditions and limitations

of this Paragraph SC-16.02. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.

- B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the 30-day period specified in Paragraph SC-16.01.D. and in all other cases within a reasonable time after the Claim or counter claim, dispute, or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such Claim or counter claim, dispute, or other matter in question would be barred by the applicable statute of limitations.
- C. No arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder, or in any other manner any individual or entity (including Engineer, Resident Project Representative, and the officers, directors, partners, employees, agents, or consultants of each and any of them) who is not party to this Contract unless:
 - 1. the inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and
 - 2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings, and
- D. The award rendered by the arbitrator(s) shall be:
 - 1. consistent with the agreement between the parties, and
 - 2. in writing, and shall include:
 - a. a concise breakdown of the award, and
 - b. a written explanation of the award specifically citing the Contract Document provisions deemed applicable and relied on in making the award.
- E. Subject to provisions of the Controlling Law relating to vacating or modifying an arbitration award, the award will be final. Judgment may be entered upon it in any court having jurisdiction thereof and it will not be subject to modification or appeal.

- F. The fees and expenses of the arbitrator(s) and any arbitration service shall be shared equally by Owner and Contractor.

SC-17.07 Add a new paragraph immediately after Paragraph 17.06 that is to read as follows:

SC-17.07 Confidential Information

- A. All Drawings, Specifications, technical data, and other information furnished to Contractor either by Owner or Engineer or developed by Contractor or others in connection with the Work are, and will remain, the property of Owner or Engineer, and shall not be copied or otherwise reproduced or used in any way except in connection with the Work, or disclosed to third parties or used in any manner detrimental to the interests of Owner or Engineer.
- B. The following information is not subject to the above confidentiality requirements:
 - 1. information in the public domain through no action of Contractor in breach of the Contract Documents; or
 - 2. information lawfully possessed by Contractor before receipt from Owner or Engineer; or
 - 3. information required to be disclosed by Laws or Regulations, or by a court or agency of competent jurisdiction. However, in the event Contractor shall be so required to disclose such information, Contractor shall, prior to disclosure, provide reasonable notice to Owner and Engineer, who shall have the right to interpose all objections Owner may have to the disclosure of such information.

SC-18 Add new Article immediately after Article 17, which is to read as follows:

ARTICLE SC-18 – STATUTORY REQUIREMENTS

SC-18.01 This Article contains portions of certain Laws or Regulations which, by provision of Laws or Regulations, are required to be included in the Contract Documents. The material included in this Article may not be complete or current. Contractor's obligation to comply with all Laws and Regulations applicable to the Work is set forth in Paragraph 6.09 of the General Conditions.

++ END OF SPECIAL CONDITIONS ++

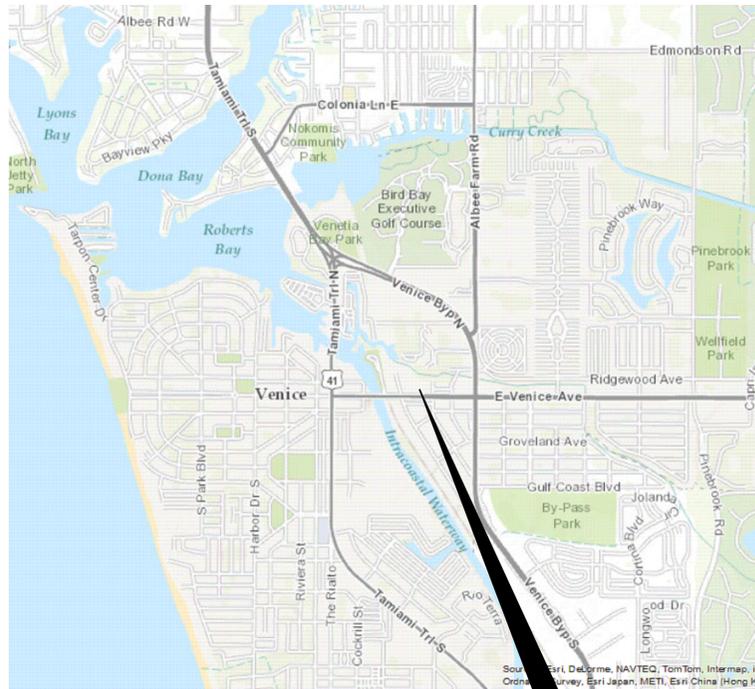
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CITY OF VENICE UTILITIES DEPT. CITY OF VENICE, FL

REVERSE OSMOSIS WATER TREATMENT PLANT HIGH SERVICE PUMP REPLACEMENT

JANUARY 2016 BID DOCUMENTS



PROJECT
SITE

LOCATION MAP

NOT TO SCALE
200 WARFIELD AVENUE,
VENICE FL, 34285

CITY COUNCIL

JOHN HOLIC	MAYOR
KIT McKEON	VICE MAYOR
JEANETTE GATES	COUNCIL MEMBER
BOB DANIELS	COUNCIL MEMBER
RICHARD CAUTERO	COUNCIL MEMBER
FRED FRAIZE	COUNCIL MEMBER
DEBORAH ANDERSON	COUNCIL MEMBER



ARCADIS-US, INC.
CERTIFICATION OF AUTHORIZATION NO. 7917
14025 RIVEREDGE DR. SUITE. 600 TAMPA FL 33637
PH: (813) 903-3100 FAX: (813) 903-9115

REGISTERED ENGINEERS/ STATE OF FLORIDA

GENERAL DEMOLITION MECHANICAL	SEAN KEOKI CHAPARRO NO. 75865	_____
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ELECTRICAL INSTRUMENTATION	KEFF SCOTT KURELLA NO. 63077	_____
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SHEET INDEX:

SHEET NO.	GENERAL
G-1	COVER SHEET
G-2	INDEX, ABBREVIATIONS, GENERAL NOTES, LEGENDS AND SYMBOLS
G-3	OVERALL SITE PLAN
SHEET NO.	DEMOLITION
D-1	HIGH SERVICE PUMP DEMOLITION PLAN AND SECTION
SHEET NO.	MECHANICAL
M-1	HIGH SERVICE PUMP STATION PLAN
M-2	HIGH SERVICE PUMP STATION SECTIONS
M-3	HIGH SERVICE PUMP STATION DETAILS
SHEET NO.	ELECTRICAL
E-1	NOTES, SYMBOLS AND ABBREVIATIONS
E-2	POWER PLANS
E-3	SINGLE LINE AND INTERCONNECT DIAGRAMS
SHEET NO.	INSTRUMENTATION
I-01	NOTES, SYMBOLS AND ABBREVIATIONS
I-02	P&ID

ABBREVIATIONS

AB	ANCHOR BOLT	HORIZ	HORIZONTAL
ABAN	ABANDONED	HP	HIGH POINT
ADDL	ADDITIONAL	ID	INSIDE DIAMETER
ADJ	ADJUSTABLE	IN	INCHES
ACS PNL	ACCESS PANEL	INF	INFLUENT
ALT	ALTERNATE	JT	JOINT
BF	BLIND FLANGE	LR	LONG RADIUS
BL	BASELINE	LSH	LEVEL SWITCH HIGH
BLDG	BUILDING	LSLL	LEVEL SWITCH LOW LOW
BOP	BOTTOM OF PIPE	MAX	MAXIMUM
BOT	BOTTOM	MFG	MANUFACTURER
BRG	BEARING	MGD	MILLION GALLONS PER DAY
BRP	BUILDING REFERENCE POINT	MH	MANHOLE
		MIN	MINIMUM
		o.c.	ON CENTER
CJ	CONSTRUCTION JOINT	OD	OUTSIDE DIAMETER
CIP	CLEAN IN PLACE	O/F	OVER FLOW
CO	CLEAN OUT	OPNG	OPENING
CLR	CLEAR	OPP	OPPOSITE
CONC	CONCRETE	PE	PLAIN END
CONT	CONTINUED	PI	POINT OF INTERSECTION
CPLG	COUPLING	PL	PLATE OR PROPERTY LINE
CU YD	CUBIC YARD(S)	PSF	PRESSURIZED SOLUTION FEED
DET	DETAIL	PSI	POUNDS PER SQUARE INCH
DIP	DIAPHRAGM IRON PIPE	R	RISER
DIA	DIAMETER	RED	REDUCER
DISCH	DISCHARGE	REINF	REINFORCEMENT OR REINFORCE
DN	DOWN	REQ	REQUIRED
EA	EACH	RJ	RESTRAINED JOINT
EFF	EFFLUENT	RO	REVERSE OSMOSIS
EJ	EXPANSION JOINT	ROW	RIGHT OF WAY
EL	ELEVATION	SHT	SHEET
ELEC	ELECTRIC	SPA	SPACING
EQ	EQUAL	SR	SHORT RADIUS
EXIST	EXISTING	STD	STANDARD
FDN	FOUNDATION	STRUCT	STRUCTURAL
FIN	FINISHED	S/W	SIDEWALK
FLEX	FLEXIBLE	T	TREAD
FLG	FLANGE	T&B	TOP AND BOTTOM
FCA	FLANGED COUPLING ADAPTER	THK	THICK / THICKNESS
FLR	FLOOR	TYP	TYPICAL
FT	FEET	UN	UNLESS OTHERWISE NOTED
GA	GAGE OR GAUGE	VERT	VERTICAL
G	GROUND	W/	WITH
GRG	GRATING	WTP	WATER TREATMENT PLANT

GENERAL NOTES:

- EXISTING HIGH SERVICE PUMP STATION SHALL REMAIN IN SERVICE DURING NEW SYSTEM CONSTRUCTION. DEMOLITION SHALL OCCUR ONLY AFTER NEW EQUIPMENT IS TESTED AND DEEMED BY THE ENGINEER TO BE OPERATIONAL.
- PLANT OPERATIONS SHALL NOT BE INTERRUPTED BY CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL COORDINATE HIS WORK WITH PLANT STAFF TO PREVENT FACILITY DISRUPTION. CONTRACTOR SHALL MAINTAIN ACCESS TO THE HIGH SERVICE PUMP SYSTEM IN SERVICE AT ALL TIMES.
- CONTRACTOR SHALL SUBMIT A CONSTRUCTION STAGING PLAN FOR APPROVAL BY THE ENGINEER.
- THE INFORMATION PROVIDED IN THESE DRAWINGS IS SOLELY TO ASSIST THE CONTRACTOR IN ASSESSING THE NATURE AND EXTENT OF CONDITIONS THAT MIGHT BE ENCOUNTERED DURING THE COURSE OF THE WORK. THE BIDDERS ARE DIRECTED, PRIOR TO BIDDING, TO CONDUCT WHATEVER INVESTIGATIONS THEY DEEM NECESSARY TO ARRIVE AT THEIR OWN CONCLUSIONS REGARDING THE ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED, AND UPON WHICH THEIR BIDS WILL BE BASED.
- PORTIONS OF CONSTRUCTION OF THE PROJECT, AUTHORIZED BY PERMIT OR LICENSE AGREEMENT, WILL BE SUBJECT TO INSPECTION AND TESTS AS MAY BE NECESSARY BY THE PERMIT GRANTING AUTHORITY. ALL CONTRACTOR SUPERVISORY PERSONNEL SHALL FURNISH INFORMATION TO AND COOPERATE WITH THESE AUTHORITIES IN CONDUCTING THEIR TESTING AND INSPECTION PROGRAM.
- ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST APPLICABLE FEDERAL, STATE AND LOCAL AGENCY'S REGULATIONS AND STANDARDS. WHEN CONFLICTS OCCUR BETWEEN REQUIREMENTS SHOWN ON THESE DRAWINGS AND SPECIFICATIONS AND REGULATORY CRITERIA, THE MORE STRINGENT REQUIREMENT SHALL PREVAIL. THE CONTRACTOR SHALL VERBALLY BRING ANY CONFLICT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY FOLLOWED BY AN OFFICIAL WRITTEN NOTIFICATION WITHIN 24 HOURS.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND PAYING FOR SITE AND BUILDING PERMITS THAT MAY BE REQUIRED THAT PERTAIN TO HIS CONTRACTED WORK. SUCH PERMITS SHALL BE OBTAINED BY THE CONTRACTOR PRIOR TO THE CONTRACTOR BEGINNING WORK ON THE PORTION OF THE PROJECT REQUIRING SAID PERMITS.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION STAKING TO INCLUDE HORIZONTAL AND VERTICAL CONTROL FOR ALIGNMENT OF WORK. ALL SURVEY WORK TO ESTABLISH THE HORIZONTAL AND VERTICAL CONTROL SHALL BE UNDER THE GUIDANCE AND DIRECT SUPERVISION OF A REGISTERED PROFESSIONAL SURVEYOR AND MAPPER. ARCADIS-US, INC. DOES NOT SUPPORT TO THE ACCURACY OF THE SURVEY INFORMATION PROVIDED IN THESE DRAWINGS.
- OSHA'S EXCAVATION SAFETY STANDARDS 29, CFR PART 1926.650-652 SUBPART P ARE CONSIDERED AS COMPLEMENTARY TO THESE CONTRACT DOCUMENTS. IF THERE IS ANY DUPLICATION, REDUNDANCY OR CONFLICT BETWEEN THE STIPULATIONS OF THESE CONTRACT DOCUMENTS AND THOSE STANDARDS, THE MOST STRINGENT REQUIREMENT SHALL GOVERN.
- UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR SHALL REPLACE ALL EXISTING PAVEMENT, STABILIZED EARTH, CURBS, DRIVEWAYS, SIDEWALKS, DRAINAGE CULVERTS, LANDSCAPING, FENCES, MAILBOXES, IRRIGATION SYSTEMS, SIGNS, AND OTHER ITEMS DISTURBED BY CONSTRUCTION TO A CONDITION EQUAL TO OR BETTER THAN PRE-CONSTRUCTION CONDITIONS. CONTRACTOR SHALL REPAINT/RESTRIPE ALL RESURFACED PAVEMENT TO MATCH PRE-CONSTRUCTION CONDITIONS.
- ALL SIDEWALK THAT BECOMES UNDERMINED OR DAMAGED SHALL BE REMOVED AND REPLACED. SIDEWALKS SHALL BE RECONSTRUCTED WITHIN TWO (2) WEEKS AFTER REMOVAL UNLESS OTHERWISE APPROVED BY THE ENGINEER OR OWNER. WHEN EXISTING SIDEWALK IS REMOVED, IT SHALL BE REMOVED TO THE NEAREST JOINT. ALL SIDEWALK RECONSTRUCTION SHALL BE HANDICAP ACCESSIBLE AND SHALL MEET OR EXCEED THE MOST RECENT ADA AND FLORIDA ACCESSIBILITY STANDARDS. SEE DETAIL SHEETS FOR SIDEWALK DETAIL.
- CONTRACTOR SHALL USE EXTREME CAUTION AROUND ALL BURIED AND AERIAL ELECTRICAL FACILITIES.
- ALL ELEVATIONS SHOWN HEREON ARE IN FEET AND ARE BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929, NGVD 1929. THE CONTROL BENCHMARK FOR THE PROJECT IS BENCHMARK "X 38" BRASS DISK IN CONCRETE, LOCATED ALONG THE CSX RAILROAD APPROXIMATELY 270 FEET NORTH OF VENICE AVENUE AND 26.5 WEST OF THE WEST RAIL OF THE CSX TRACKS, HAVING AN ELEVATION OF 7.76 NGVD.
- LOCATIONS, ELEVATIONS AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF THE PREPARATION OF THESE DRAWINGS AND DO NOT PURPORT TO BE ABSOLUTELY CORRECT. THE CONTRACTOR SHALL VERIFY THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF ALL EXISTING UTILITIES, STRUCTURES, ETC. AFFECTING THE WORK PRIOR TO CONSTRUCTION.
- IF UTILITY FIELD LOCATIONS ARE REQUIRED, THE CONTRACTOR SHALL COORDINATE THE CONSTRUCTION SCHEDULE WITH ALL UTILITY COMPANIES AS WELL AS ANY AFFECTED CITY AND COUNTY DEPARTMENTS BY PROVIDING A MINIMUM OF 48 HOURS NOTICE OF WHEN CONSTRUCTION WILL COMMENCE IN AN AREA IN ORDER TO PERMIT FIELD LOCATION OF UTILITY LINES PRIOR TO CONSTRUCTION. A TOLL-FREE NUMBER, 1-800-432-4770 IS AVAILABLE TO ASSIST IN SUCH COORDINATION EFFORTS. THIS NUMBER IS PART OF THE UTILITY NOTIFICATION PROGRAM PROVIDED BY SUNSHINE STATE ONE-CALL OF FLORIDA, INC. BUT DOES NOT NECESSARILY REPRESENT ALL UTILITY COMPANIES IN THE AREA.
- ALL UTILITIES SHALL BE KEPT IN OPERATION EXCEPT WITH THE EXPRESS WRITTEN CONSENT OF THE UTILITY OWNER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PRESERVE EXISTING UTILITIES AND ANY AND ALL DAMAGE TO EXISTING UTILITIES AS A RESULT OF THE CONTRACTOR'S ACTIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL CONTACT THE ENGINEER PRIOR TO PROCEEDING WITH ANY SITE WORK WITH WHICH A CONFLICT HAS ARISEN DURING CONSTRUCTION OF ANY IMPROVEMENTS SHOWN ON THESE DRAWINGS.
- CONSTRUCTION SHALL BE CARRIED OUT "IN THE DRY". THE CONTRACTOR SHALL REVIEW SITE CONDITIONS AND DETERMINE METHODS AND EXTENT OF DEWATERING NECESSARY AND SHALL INCLUDE COSTS OF DEWATERING IN THE BID. NO ADDITIONAL COMPENSATION SHALL BE PROVIDED FOR CONTROL OF GROUND OR SURFACE WATER OR FOR ADDITIONAL MATERIALS OR REWORK REQUIRED AS A RESULT OF INADEQUATE OR INSUFFICIENT DEWATERING.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING RECORD DRAWING INFORMATION INCLUDING, BUT NOT LIMITED TO, FINISHED GRADE ELEVATIONS, TIES TO WATER LINES, VALVES, BENDS, SERVICE CONNECTIONS AND ELEVATIONS OF PIPES WHERE DEPTH OF COVER VARIES FROM DESIGN, TIES TO SANITARY SEWER LINES, MANHOLE RIM AND INVERT ELEVATIONS, CLEANOUTS AND SERVICE CONNECTIONS, TIES TO STORM SEWER LINES, STRUCTURE TOP AND INVERT ELEVATIONS, PLUS LOCATIONS, DIMENSIONS AND ELEVATIONS OF ALL OTHER CONSTRUCTION COMPONENTS WHICH VARY FROM THE DESIGN.
- ALL WORK TO BE PERFORMED FOR THE COMPLETION OF THIS PROJECT SHALL BE CONSTRUCTED ACCORDING TO THE BEST PRACTICES OF THE INDUSTRY AND IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, COUNTY AND/OR CITY CODES, ORDINANCES, STANDARDS AND PERMIT CONDITIONS.
- SOD ALL DISTURBED AREAS. GRASS TYPE AND OTHER REQUIREMENTS TO BE APPROVED BY ENGINEER.
- THE CONTRACTOR SHALL PERFORM A PRESSURE TEST ON ALL WATER AND FORCE MAINS (AS APPLICABLE) AS STATED IN THE SPECIFICATIONS AND/OR IN ACCORDANCE WITH REQUIREMENTS OF THE UTILITY HAVING OR AS OTHERWISE DIRECTED BY THE ENGINEER. SAID TESTS ARE TO BE CERTIFIED BY THE ENGINEER. THE SCHEDULING, COORDINATION AND NOTIFICATION OF ALL PARTIES IS THE CONTRACTOR'S RESPONSIBILITY.
- NEW SYSTEMS SHALL NOT BE PLACED IN SERVICE (FOR TEMPORARY OR PERMANENT USE) UNTIL ALL TESTING AND INSPECTIONS HAVE BEEN COMPLETED, TEST REPORTS AND "AS-BUILTS" FOR THOSE SYSTEMS SUBMITTED, AND CLEARANCE HAS BEEN OBTAINED FROM THE OWNER.
- THESE DRAWINGS MAY BE ALTERED SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.
- THE PIPE LENGTHS INDICATED IN THESE PLANS ARE APPROXIMATE. ACTUAL LIMITS MAY BE SET IN THE FIELD AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL VERIFY IN THE FIELD ALL CONNECTING POINTS FOR ALL PIPING PRIOR TO COMMENCING CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES.
- ALL MATERIALS NOT CLAIMED BY THE CITY SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED BY THE CONTRACTOR IN AREAS PROVIDED BY THE CONTRACTOR.
- THE SYMBOLS AND ABBREVIATIONS LIST IS A STANDARD GUIDE INTENDED FOR GENERAL USE. THEREFORE, NOT ALL SYMBOLS AND ABBREVIATIONS CONTAINED ARE NECESSARILY USED ON THIS PARTICULAR PROJECT AND SHOULD BE USED FOR CLARIFICATION ONLY.
- THE CONTRACTOR SHALL READ AND UNDERSTAND THE ENTIRE SET OF CONSTRUCTION DOCUMENTS TO ENSURE S/HE UNDERSTANDS THE FULL SCOPE OF THE PROJECT AND CAN CONVEY THE REQUIRED MATERIALS AND METHODS OF INSTALLATION TO THE CONTRACTORS, SUPPLIERS, AND INSTALLERS.
- ALL EXISTING DIMENSIONS AND ELEVATIONS ARE ± (APPROXIMATE)
- THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, STORM DRAINS, SEWERS, UTILITIES, AND OTHER FACILITIES IN THE CONSTRUCTION AREA. THE CONTRACTOR SHALL REPAIR ANY DAMAGES DUE TO HIS CONSTRUCTION ACTIVITIES AT NO ADDITIONAL COST TO THE OWNER.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO BLIND FLANGE OR OTHERWISE PLUG EXISTING AND PROPOSED WORK AS REQUIRED TO KEEP THE PLANT IN OPERATION AND CLOSE OFF PIPING CONNECTED TO OPERATING SYSTEMS.
- AT VARIOUS TIMES DURING THE WORK INCLUDED UNDER THIS CONTRACT, IT SHALL BE NECESSARY TO SHUTDOWN CERTAIN OPERATING PLANT SYSTEMS. ALL REQUIRED SYSTEM OR PARTIAL SYSTEM SHUTDOWNS SHALL BE COORDINATED WITH, AND SCHEDULED AT TIMES SUITABLE TO THE OWNER AND IN ACCORDANCE WITH SECTION 01 16. COORDINATION WITH OWNER'S OPERATIONS SHUT DOWN SHALL NOT COMMENCE UNTIL ALL REQUIRED MATERIALS ARE IN HAND AND READY FOR INSTALLATION.
- CONTRACTOR SHALL STORE CONSTRUCTION EQUIPMENT AND MATERIALS ONLY IN STAGING AREAS APPROVED BY THE ENGINEER. SECURITY OF CONSTRUCTION EQUIPMENT AND MATERIALS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. PUBLIC RIGHTS-OF-WAY MAY NOT BE UTILIZED FOR STORAGE OF EQUIPMENT OR MATERIALS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENTITY THAT OWNS THE RIGHT-OF-WAY. CONTRACTOR SHALL PROVIDE PROTECTIVE MATTING, FUEL CONTAINMENT, AND ALL OTHER MATERIALS, EQUIPMENT AND LABOR TO PROTECT THE STAGING AREA DURING CONSTRUCTION.
- THE CONTRACTOR SHALL CONDUCT WORK INCLUDED UNDER THIS CONTRACT IN SUCH A MANNER TO PERMIT NORMAL OPERATIONS OF THE PLANT AT ALL TIMES.

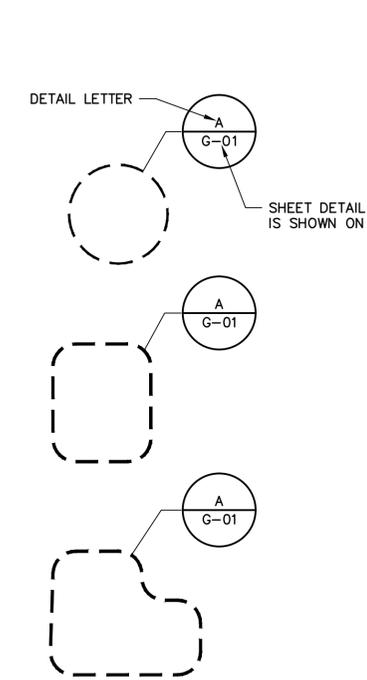
LEGEND

	NEW EQUIPMENT, PIPING, STRUCTURE, ETC.		PROPOSED PIPING WITH DIRECTION OF FLOW
	NEW BURIED EQUIPMENT, PIPING, STRUCTURE, ETC.		PROPOSED PUMP
	EXIST. EQUIPMENT, PIPING, STRUCTURE, ETC.		TEE
	EXIST. BURIED EQUIPMENT, PIPING, STRUCTURE, ETC.		90° BEND
	CENTERLINE		45° BEND
	SPOT ELEVATION		FLOOR DRAIN OR AREA DRAIN
	EXISTING SPOT ELEVATION		ELECTRIC UTILITY BOX
	EXISTING FENCE		
	UNION		
	REDUCER		
	PIPING ELBOW, 90° TURNED UP		
	PLUG OR CAP		
	STRAINER		

SYMBOLS

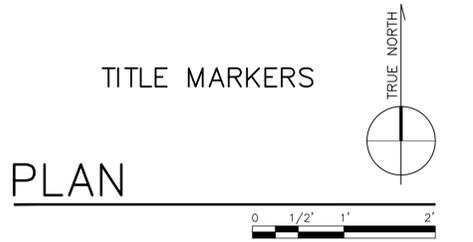
	AIR RELEASE VALVE (ARV)
	SWING CHECK VALVE
	PRESSURE SWITCH & GAUGE
	BUTTERFLY VALVE (BV)
	GATE VALVE (GV)

DETAIL MARKERS

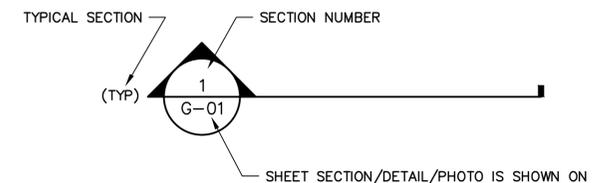


	UNDISTURBED SOIL
	GROUND SURFACE
	CONCRETE
	DEMOLITION
	CONSTRUCTION STAGING

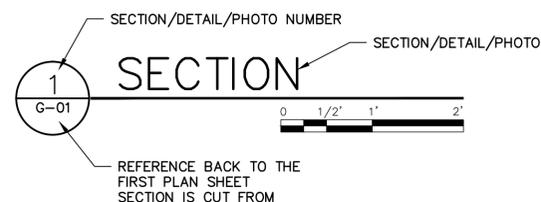
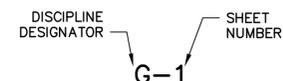
TITLE MARKERS



SECTION MARKERS



SHEET NUMBER IDENTIFICATION



CERTIFICATE OF AUTHORIZATION 7917
14025 RIVEREDGE DR. STE. 600
TAMPA, FL 33637

CONSULTANTS

BID DOCUMENTS

SEALS

ORIGINAL SIGNED AND SEALED SET ON FILE

SEAN KEOKI CHAPARRO, PE
LIC. NO. 75865

SARASOTA COUNTY



RO WTP HIGH SERVICE PUMP REPLACEMENT

NO.	DATE	ISSUED FOR	BY

COPYRIGHT: ARCADIS U.S., INC. 2015

DATE: JANUARY 2016
PROJECT NO.: 05710026.0000
FILE NAME: G-02
DESIGNED BY: M. BUTCHER
DRAWN BY: M. CORNELISON
CHECKED BY: S. CHAPARRO

SHEET TITLE

GENERAL
INDEX, ABBREVIATIONS,
GENERAL NOTES,
LEGENDS AND
SYMBOLS

SCALE: AS SHOWN

G-02
SHEET 2 OF 12

User: MORNELISON Spec: AUS-NGSMOD File: I:\ACAD\PROJ\5710 - VENICE, CITY OF\026\SHEETS\GENERAL\G-03.DWG Scale: 1:1 Saved Date: 1/7/2016 Time: 07:48 Plot Date: 1/8/2016, 13:07 : Layout: 3

SEALS
ORIGINAL SIGNED AND SEALED SET ON FILE
 SEAN KEOKI CHAPARRO, PE
 LIC. NO. 75865

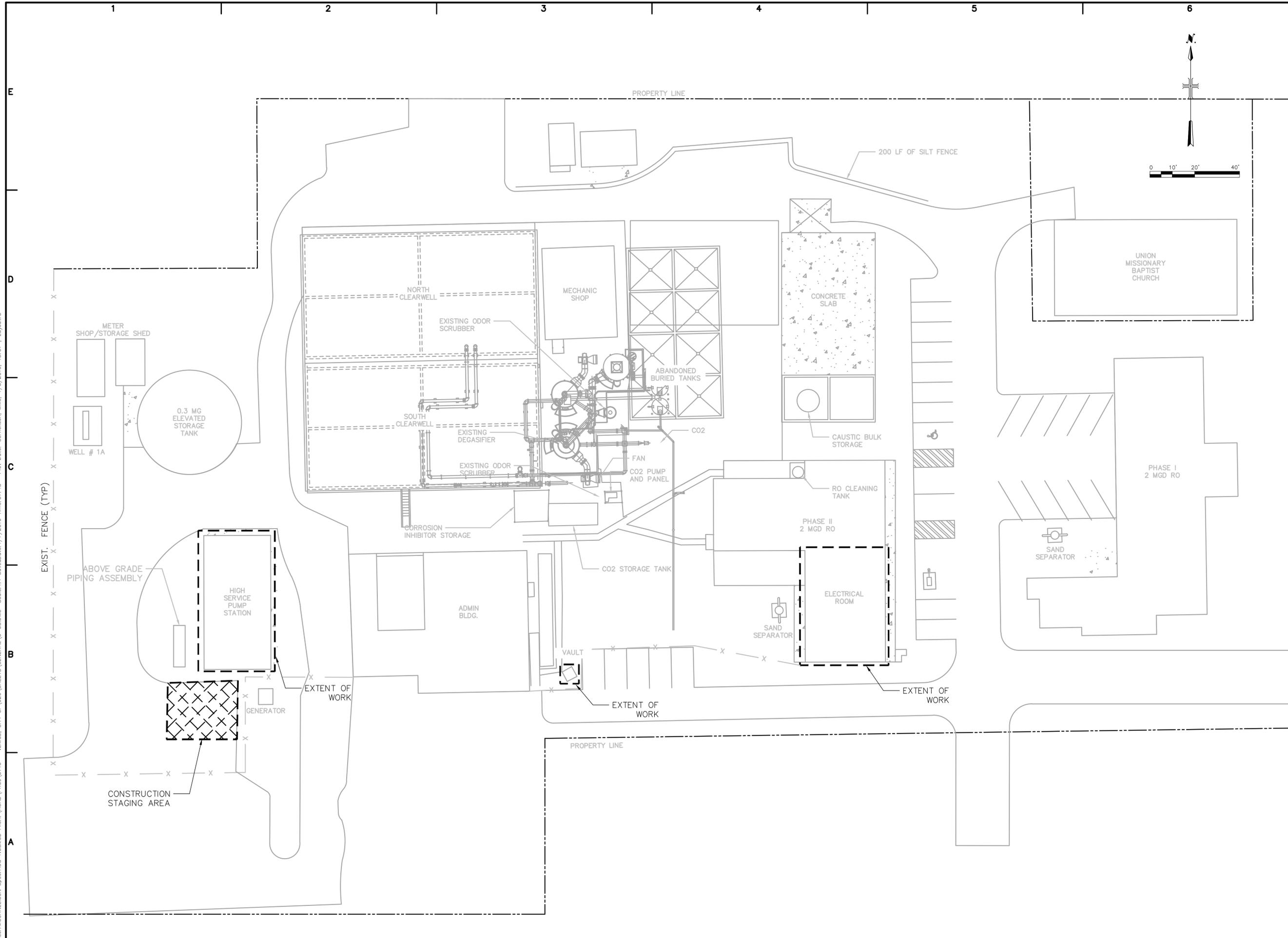
SARASOTA COUNTY

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 FILE NAME: G-03
 DESIGNED BY: M. BUTCHER
 DRAWN BY: M. CORNELISON
 CHECKED BY: S. CHAPARRO

SHEET TITLE
GENERAL OVERALL SITE PLAN
 SCALE: 1" = 20'-0"
G-03
 SHEET 3 OF 12



User: MCBRELISON, Spec: AUS-NCSMOD, File: \\ACAD\PROJ\5710 - VENICE, CITY OF\026\SHEETS\MECHANICAL\M-01.DWG, Scale: 1:1, SavedDate: 1/8/2016, Time: 13:23, Plot Date: Cornelison, Mkr: 1/8/2016, 13:40, Layout: 5



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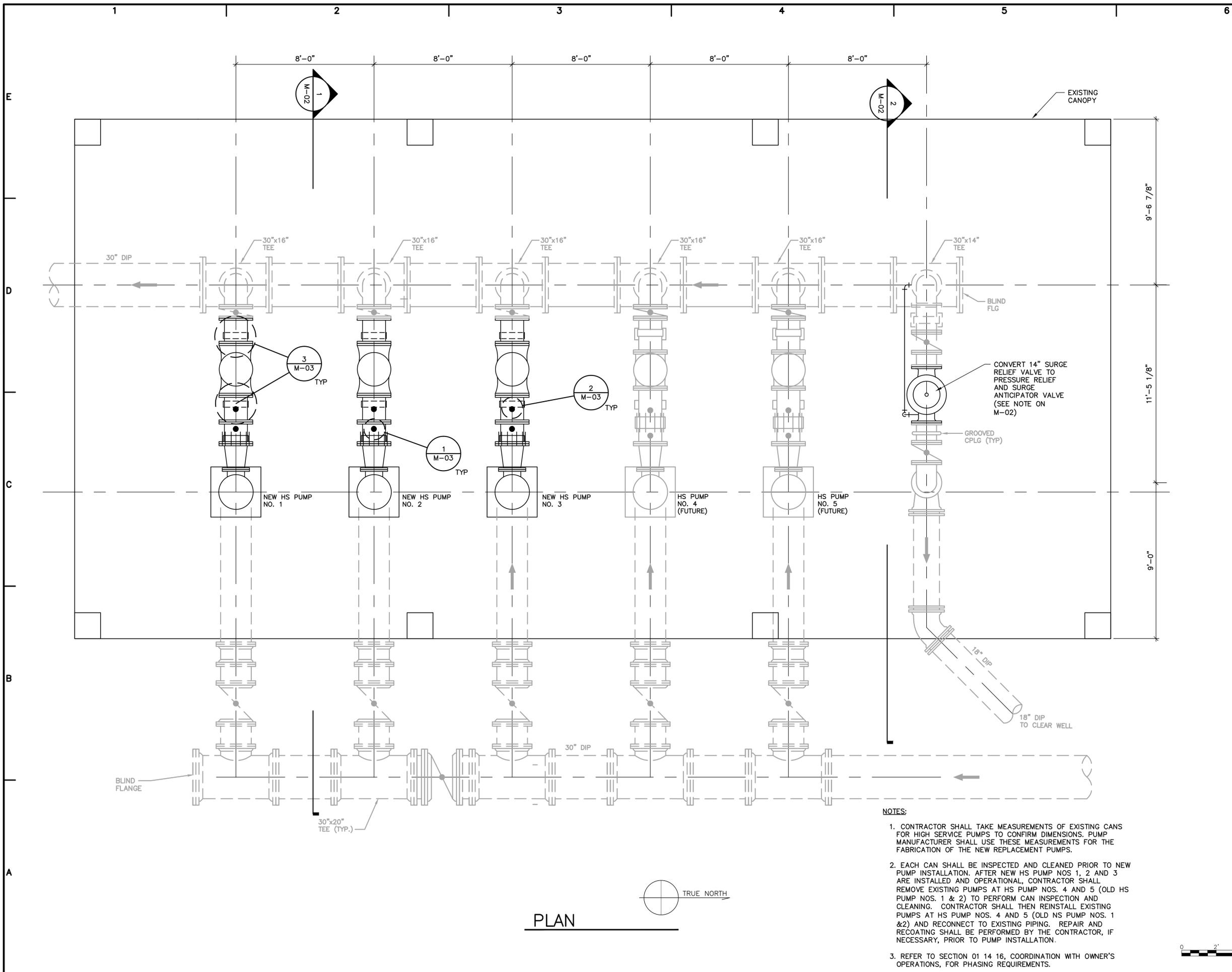
DATE: JANUARY 2016
PROJECT NO.: 05710026.0000
FILE NAME: M-01
DESIGNED BY: M. BUTCHER
DRAWN BY: M. CORNELISON
CHECKED BY: S. CHAPARRO

SHEET TITLE

MECHANICAL
**HIGH SERVICE PUMP
STATION PLAN**

SCALE: 3/8" = 1'-0"

M-01
SHEET 5 OF 12



PLAN

NOTES:

- CONTRACTOR SHALL TAKE MEASUREMENTS OF EXISTING CANS FOR HIGH SERVICE PUMPS TO CONFIRM DIMENSIONS. PUMP MANUFACTURER SHALL USE THESE MEASUREMENTS FOR THE FABRICATION OF THE NEW REPLACEMENT PUMPS.
- EACH CAN SHALL BE INSPECTED AND CLEANED PRIOR TO NEW PUMP INSTALLATION. AFTER NEW HS PUMP NOS 1, 2 AND 3 ARE INSTALLED AND OPERATIONAL, CONTRACTOR SHALL REMOVE EXISTING PUMPS AT HS PUMP NOS. 4 AND 5 (OLD HS PUMP NOS. 1 & 2) TO PERFORM CAN INSPECTION AND CLEANING. CONTRACTOR SHALL THEN REINSTALL EXISTING PUMPS AT HS PUMP NOS. 4 AND 5 (OLD HS PUMP NOS. 1 & 2) AND RECONNECT TO EXISTING PIPING. REPAIR AND RECOATING SHALL BE PERFORMED BY THE CONTRACTOR, IF NECESSARY, PRIOR TO PUMP INSTALLATION.
- REFER TO SECTION 01 14 16, COORDINATION WITH OWNER'S OPERATIONS, FOR PHASING REQUIREMENTS.





NO.	DATE	ISSUED FOR	BY

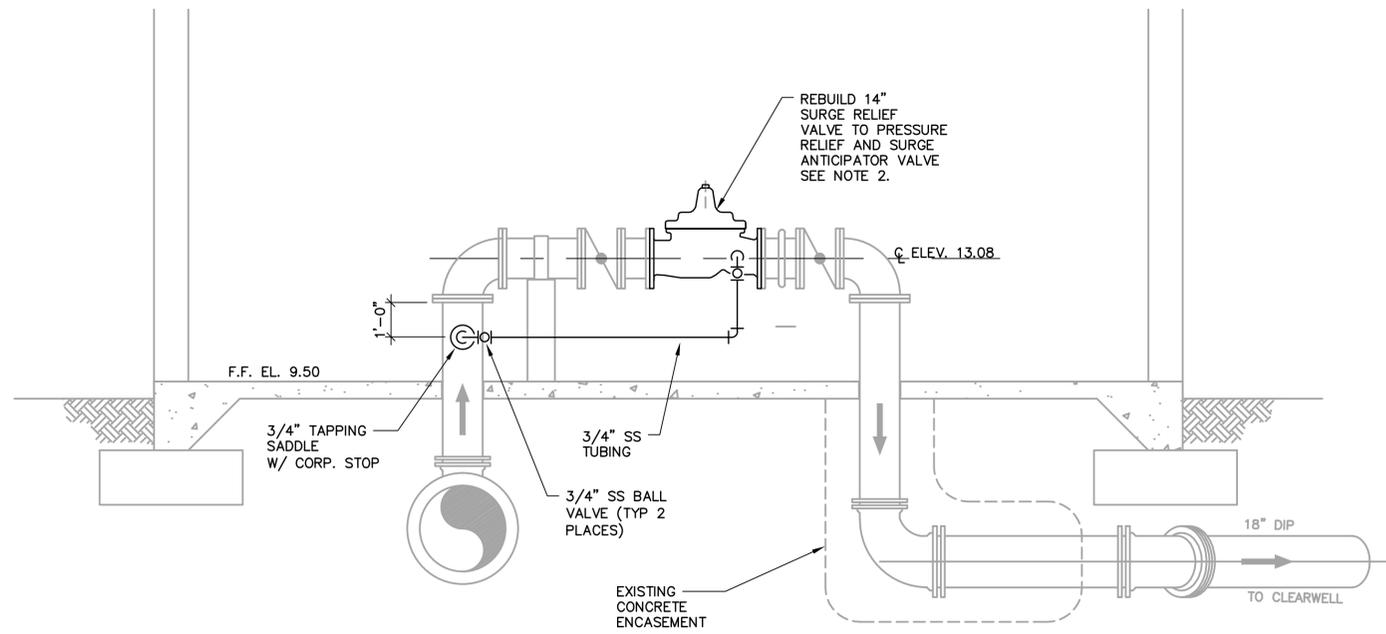
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DATE: JANUARY 2016
PROJECT NO.: 05710026.0000
FILE NAME: M-02
DESIGNED BY: M. BUTCHER
DRAWN BY: M. CORNELISON
CHECKED BY: S. CHAPARRO

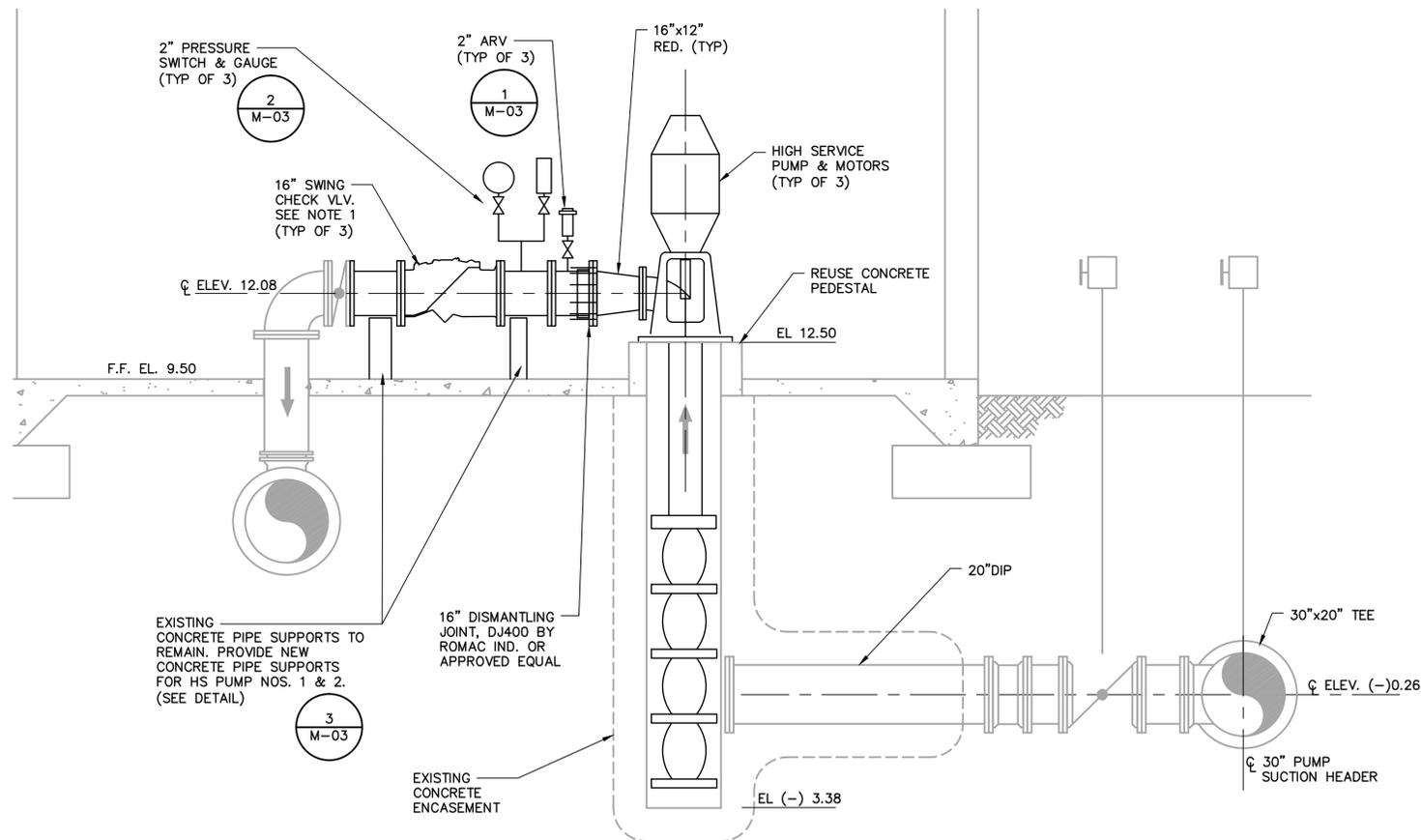
SHEET TITLE
**MECHANICAL
HIGH SERVICE PUMP
STATION SECTIONS**

SCALE: 3/8" = 1'-0"

M-02
SHEET 6 OF 12



2 SECTION - SURGE ANTICIPATOR VALVE
M-01



1 SECTION - HIGH SERVICE PUMP HEADER
M-01

NOTES:

- HORIZONTAL SWING CHECK VALVE SHALL BE VALMATIC, GLOBE STYLE, SURGEBUSTER CHECK VALVE SERIES 7200 (16-INCH) OR APPROVED EQUAL WITH MECHANICAL INDICATOR AND BACKFLOW ACTUATOR, FLANGED CONNECTIONS AND LIMIT SWITCH FOR LOW FLOW. LIMIT SWITCH SHALL BE RATED NEMA 4 AND SHALL HAVE U.L. RATED 5 AMP 250VAC CONTACTS, SPDT. PROVIDE MICRO SWITCH, MODEL NO. 914CE20-3 OR EQUAL. VALVE MATERIALS SHALL BE SUITABLE FOR LONG-TERM USE IN THE SERVICE SPECIFIED; INSIDE AND OUTSIDE OF ALL VALVES, TOGETHER WITH THE WORKING PARTS EXCEPT BRONZE AND MACHINED SURFACES, SHALL BE COATED IN ACCORDANCE WITH AWWA STANDARDS.
- CONTRACTOR SHALL REBUILD THE EXISTING 14-INCH SURGE RELIEF VALVE. THIS SHALL INCLUDE PROVIDING NEW INTERNAL RUBBER PARTS, INSPECTION OF THE INTERNAL SEAT AND BODY, AND RECOATING OF SURFACES, AS NECESSARY (ALL PARTS AND COATINGS SHALL CONFORM TO THE LATEST AWWA DRINKING WATER STANDARDS). CONTRACTOR SHALL REMOVE THE EXTERNAL PILOT CONTROL SYSTEM AND REPLACE WITH CLA-VAL E-52-03 PILOT SYSTEM TO CONVERT THE EXISTING VALVE TO A "PRESSURE RELIEF AND SURGE ANTICIPATOR" VALVE. THIS WILL INCLUDE ALL PRE-BENT TUBING, FITTINGS, PILOT CONTROLS, STRAINER AND FLOW LIMITER. VALVE MATERIALS SHALL BE SUITABLE FOR LONG-TERM USE IN THE SERVICE SPECIFIED; INSIDE AND OUTSIDE OF ALL VALVES, TOGETHER WITH THE WORKING PARTS, SHALL BE COATED IN ACCORDANCE WITH AWWA STANDARDS. PILOT SYSTEM AND VALVE OPERATION SHALL BE SUCCESSFULLY TESTED BY THE MANUFACTURER PRIOR TO ACCEPTANCE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THE VALVE PILOT SYSTEM AND APPURTENANCES DO NOT SUSTAIN DAMAGE ON SITE PRIOR TO AND DURING INSTALLATION.



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DATE: JANUARY 2016
PROJECT NO.: 05710026.0000
FILE NAME: M-03
DESIGNED BY: M. BUTCHER
DRAWN BY: M. CORNELISON
CHECKED BY: S. CHAPARRO

SHEET TITLE

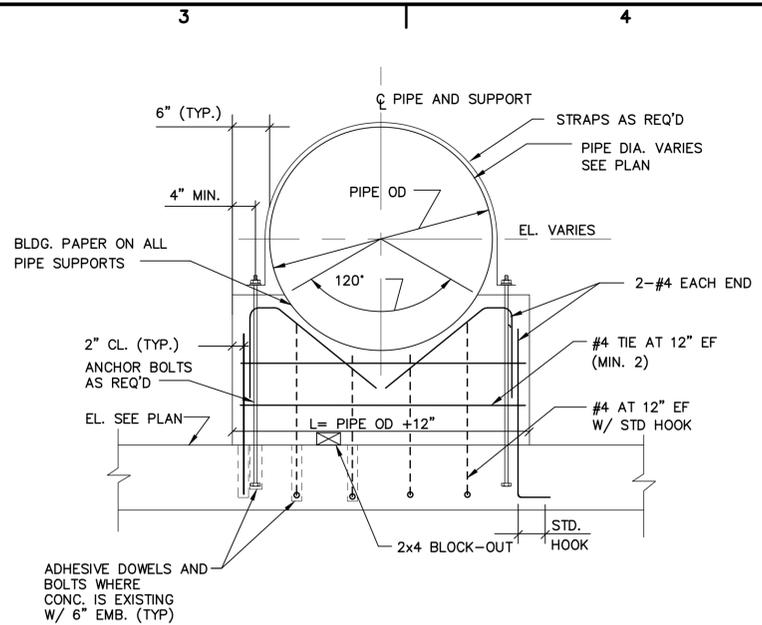
MECHANICAL

**HIGH SERVICE PUMP
STATION DETAILS**

SCALE:
NOT TO SCALE

M-03

SHEET 7 OF 12

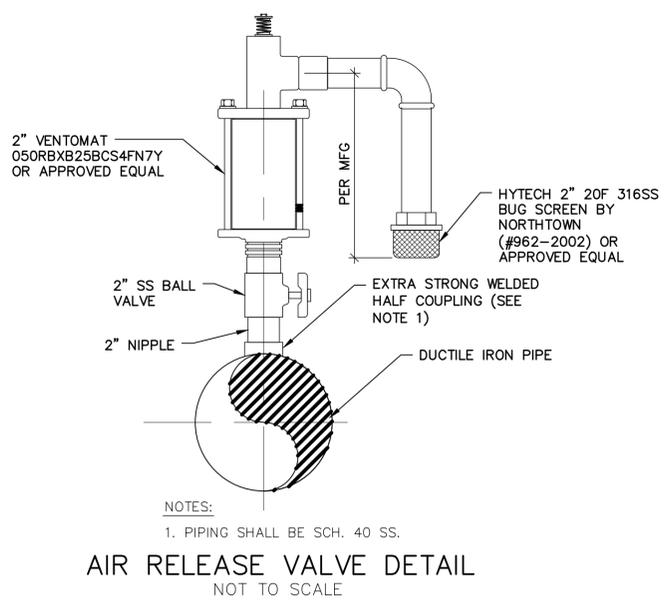


**TYPICAL SINGLE PIPE CONCRETE
SUPPORT DETAIL**

3
M-03

- NOTES:**
- WHERE NEW REINFORCING DOWELS ARE SHOWN TO BE EMBEDDED INTO THE EXISTING CONCRETE, OR WHERE REQUIRED TO REPLACE INADVERTENTLY CUT EXISTING REINFORCING, THE NEW DOWELS SHALL BE INSTALLED INTO THE DEPTH OF HOLE NOTED OR REQUIRED TO FULLY DEVELOP THE TENSILE STRENGTH OF THE REINFORCING BAR. USE HILTI RE-500SD OR APPROVED EQUAL ADHESIVE MATERIAL, HOLE DIAMETERS AND DEPTH, AND INSTALLATION PROCEDURES AS REQUIRED BY THE MANUFACTURER AND AS OUTLINED IN SPECIFICATIONS.
 - CONCRETE 28-DAY COMPRESSIVE STRENGTH: 4000 PSI.
 - REINFORCEMENT: ASTM A615, GRADE 60 OR ASTM A706, GRADE 60 WHERE REINFORCEMENT IS TO BE WELDED.
 - CONCRETE COVER FOR REINFORCING:

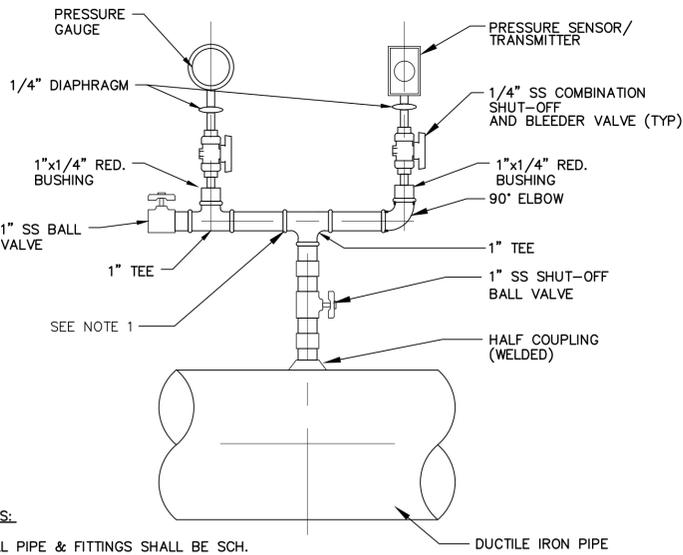
A) SURFACES CAST AGAINST SUBGRADE	3" MIN.
B) TOP SURFACES OF SLAB WHERE PVC WATER STOP IS REQUIRED IN WALLS.	3" MIN.
C) FORMED SURFACES IN CONTACT WITH WEATHER, SOIL OR LIQUID.	2" MIN.
D) BOTTOM SURFACES OF SLABS OVER LIQUID.	2" MIN.
E) SURFACES NOT IN CONTACT WITH WEATHER, SOIL OR LIQUID.	1 1/2" MIN.
 - CONSTRUCTION JOINTS SHALL BE LOCATED AS SHOWN ON THE DRAWINGS. WHERE NOT SHOWN, CONSTRUCTION JOINTS SHALL BE LOCATED AT NO MORE THAN 40' o.c. CONSTRUCTION JOINT LOCATIONS SHALL BE AS APPROVED BY THE ENGINEER.
 - EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND REVEALS NOT SHOWN ON THE DRAWINGS BUT REQUIRED BY OTHER CONTRACT DOCUMENTS, SHALL BE PROVIDED FOR PRIOR TO PLACING CONCRETE.
 - AT ALL TYPICAL CURBS, EQUIPMENT PADS AND PIPE SUPPORT PIERS, REINFORCING DOWELS SHOWN MAY BE REPLACED WITH MATCHING DOWELS SET IN EPOXY IN DRILLED HOLES AS SPECIFIED. DOWELS LOCATED CLOSER THAN 3" FROM ANY EDGE OF CONCRETE SHALL NOT BE REPLACED WITH DRILLED DOWELS.
 - WHERE DRILLED EPOXY DOWELS ARE SHOWN TO BE PLACED INTO HARDENED CONCRETE, ADJUST THE DOWEL LOCATIONS AS NEEDED TO AVOID DRILLING THROUGH ANY REINFORCING BARS. IF THE DOWEL LOCATION NEEDS TO BE MODIFIED, CONTACT THE ENGINEER.
 - DOWELS, ANCHOR BOLTS, PIPES AND OTHER EMBEDDED ITEMS SHALL BE HELD SECURELY IN POSITION WHILE CONCRETE IS BEING PLACED.
 - CONDUITS AND PIPES SHALL NOT BE EMBEDDED IN OR PASS THROUGH COLUMNS OR BEAMS UNLESS INDICATED OTHERWISE OR AUTHORIZED BY ENGINEER.
 - ALL EXPOSED CORNERS SHALL HAVE A 3/4" CHAMFER OR A 1/2" RADIUS TOOLED CORNER.



AIR RELEASE VALVE DETAIL
NOT TO SCALE

1
M-03

- NOTES:**
- WHERE ARVS ARE SHOWN ON THE PLANS, INSTALL WITH 2 INCH VENTOMAT 050RBXB25BCS4FN7Y OR APPROVED EQUAL. VALVES SHALL BE SUCCESSFULLY TESTED BY THE MANUFACTURER PRIOR TO SHIPMENT TO SITE. AIR VALVE MATERIALS SHALL BE SUITABLE FOR LONG-TERM USE IN THE SERVICE SPECIFIED AND VALVES SHALL COMPLY WITH ANSI/NSF 61 AND THE SAFE DRINKING WATER ACT. ALL VALVES SHALL BE PROVIDED WITH NAMEPLATE TO INCLUDE: MANUFACTURER NAME, PRESSURE RATING, VALVE SIZE, TEMPERATURE RATING, AND DATE OF MANUFACTURE.



PRESSURE GAUGE AND SENSOR MOUNTING DETAIL

2
M-03

- NOTES:**
- ALL PIPE & FITTINGS SHALL BE SCH. 40 304 SS.
 - FOR GAUGE AND PRESSURE SWITCH A DIAPHRAGM SEAL SHALL BE PROVIDED.

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NO.	DATE	ISSUED FOR	BY

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DATE: JANUARY 2016

PROJECT NO.: 05710026.0000

FILE NAME: E-02

DESIGNED BY: E. BATTLE

DRAWN BY: E. BATTLE

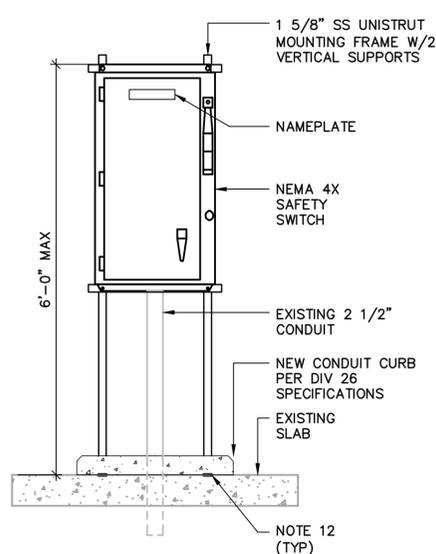
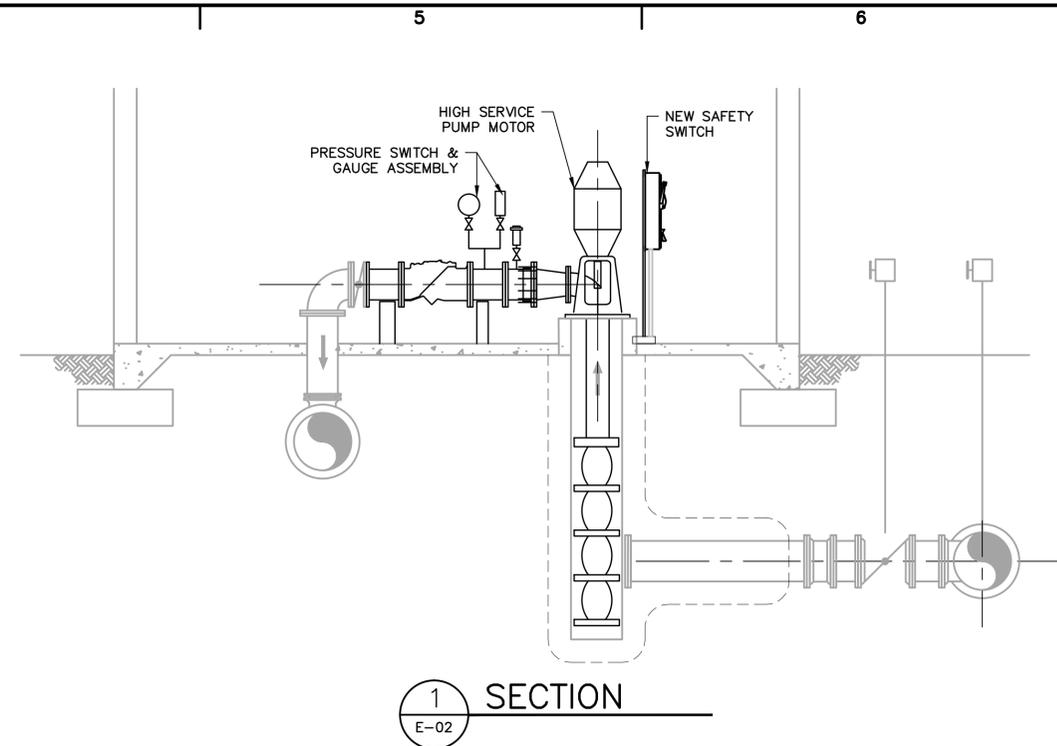
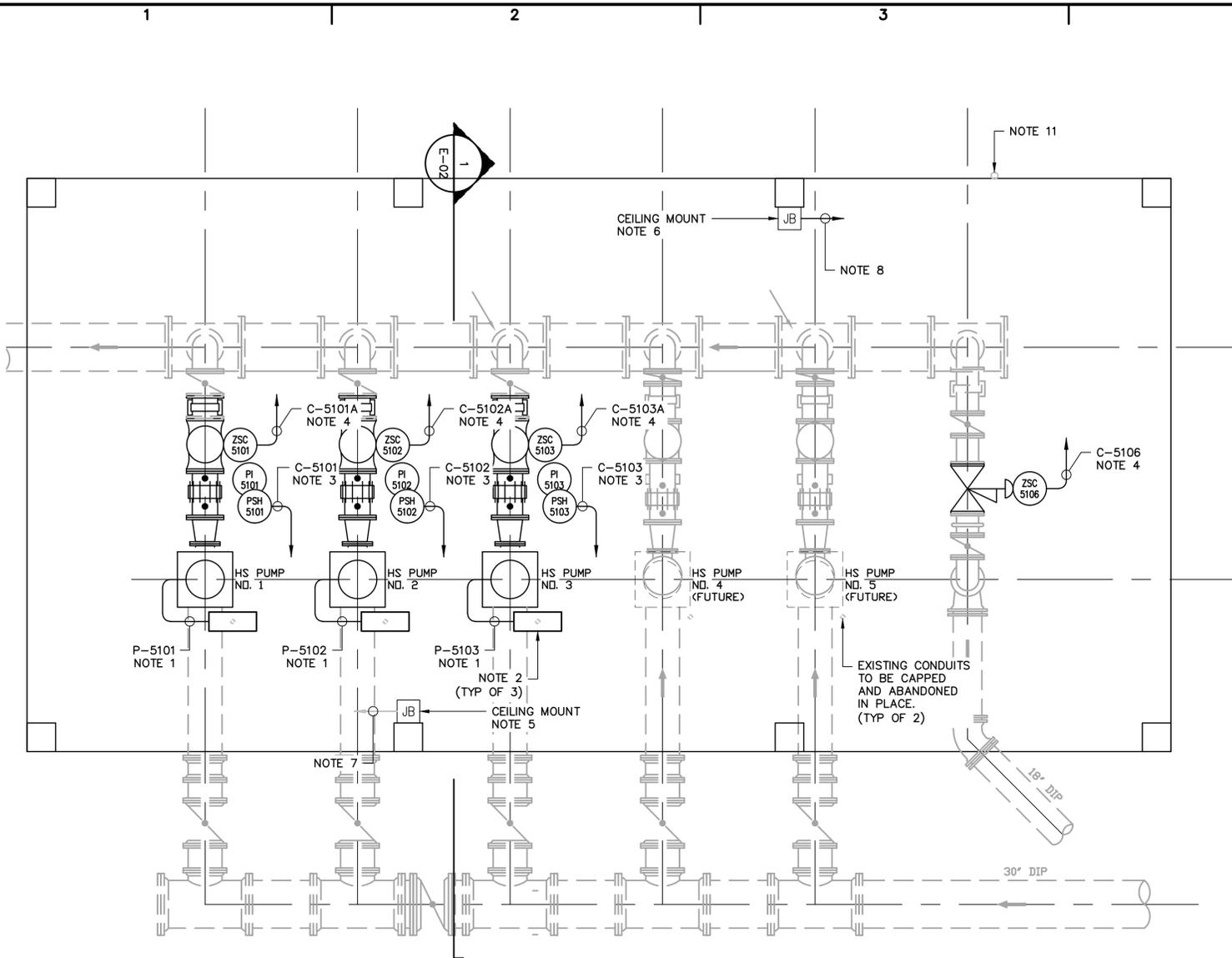
CHECKED BY: K. KURELLA

SHEET TITLE

**ELECTRICAL
POWER PLANS**

SCALE: AS SHOWN

E-02
SHEET 9 OF 12



SAFETY SWITCH SUPPORT DETAIL

- NOTES:**
- MOUNT NEW 400A, 600V, 3P, NEMA 4X, SS, ABOVE EXISTING 2 1/2" RGS CONDUIT.
 - INSTALL NEW CONDUITS FROM NEW DISCONNECT SWITCH TO MOTOR PECKERHEAD FOR MOTOR TERMINAL AND SPACE HEATER POWER. LIQUIDTIGHT FLEXIBLE CONDUIT SHALL NOT EXCEED 3 FEET.
 - ROUTE NEW 3/4" CONDUIT TO NEW SOUTHMOST CEILING MOUNTED JB.
 - ROUTE NEW 3/4" CONDUIT TO NEW NORTHMOST CEILING MOUNTED JB.
 - INSTALL NEW 8" X 8" X 4" JUNCTION BOX TO REPLACE EXISTING.
 - INSTALL NEW 8" X 8" X 4" JUNCTION BOX.
 - TIE INTO EXISTING 3/4" CONDUIT AT CEILING OF CANOPY OF HIGH SERVICE PUMP STATION. ROUTE NEW PSH SIGNALS THROUGH EXISTING 3/4" CONDUIT TO APPROPRIATE PSH PANEL NEAR EACH RESPECTIVE VFD.
 - TIE INTO EXISTING 3/4" CONDUIT FOR EXISTING SURGE ANTICIPATOR VALVE AT GRADE LEVEL OF HIGH SERVICE PUMP STATION. ROUTE NEW ZSC SIGNALS THROUGH EXISTING 3/4" CONDUIT TO TC-1 LOCATION FOR TERMINATION.
 - REPLACE EXISTING LIQUIDTIGHT FLEXIBLE CONDUIT. WHERE FEASIBLE, EXISTING RIGID TO BE REUSED.
 - REFER TO SHEETS D-01 AND E-03 FOR DEMOLITION SCOPE OF WORK.
 - APPROXIMATE LOCATION OF EXISTING 3/4" CONDUIT FOR EXISTING SURGE ANTICIPATOR VALVE.
 - PROVIDE UNISTRUT POST BASE, MODEL P9012, OR EQUAL, WITH (4) 5/8" X 4" SS ANCHOR BOLT. REFER TO SHEET M-03 FOR ADHESIVE MATERIAL REQUIREMENTS FOR ANCHOR BOLT ATTACHMENT TO EXISTING CONCRETE.



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BID DOCUMENTS

ORIGINAL SIGNED AND SEALED SET ON FILE

KEFF SCOTT KURELLA, PE
LIC. NO. 63077

SARASOTA COUNTY



RO WTP HIGH SERVICE PUMP REPLACEMENT

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DATE: JANUARY 2016
PROJECT NO.: 05710026.0000
FILE NAME: I-01
DESIGNED BY: E. BATTLE
DRAWN BY: E. BATTLE
CHECKED BY: K. KURELLA

SHEET TITLE

INSTRUMENTATION
NOTES, SYMBOLS AND ABBREVIATIONS

SCALE: AS SHOWN

I-01
SHEET 11 OF 12

GENERAL NOTES

- COORDINATE WORK WITH OTHER DRAWINGS AND DISCIPLINES.
- THE SYMBOLS SHOWN ON THIS SHEET ARE STANDARD DESIGNATIONS. NOT ALL SYMBOLS ARE APPLICABLE TO THE INCLUDED DIAGRAMS AND INSTRUMENT TAGGING SYSTEM.
- NOT ALL PIPING, FITTINGS, AND TANK DETAILS ARE SHOWN. REFER TO PROCESS DRAWINGS FOR ACTUAL DETAILS.
- INSTRUMENT IDENTIFICATION AND LOOP NUMBERS APPEAR WITH INSTRUMENT SYMBOL.
- TAG NUMBER DOES NOT CHANGE IF SIGNAL IS BROUGHT TO ANOTHER CONTRACT AREA.
- FINAL ALPHA CHARACTER IN TAG (E.G. FI-101A) INDICATES DUPLICATE DEVICE EXISTS. FI-101B MAY BE IN A A PANEL.
- LCS DENOTES LOCAL CONTROL STATION
- * ASTERISK DENOTES INSTRUMENTS/DEVICES/PANELS FURNISHED BY OTHERS AND INSTALLED BY THIS CONTRACT.

LINE TYPES

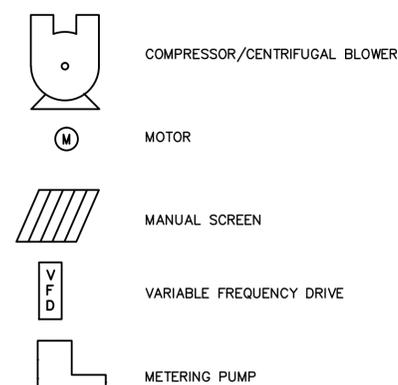
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- MODBUS COMMUNICATION
- FO FIBER OPTIC COMMUNICATION
- ETHERNET COMMUNICATION
- DEVICENET COMMUNICATION
- SERIAL COMMUNICATION
- MAIN PROCESS LINE
- AUXILIARY SYSTEMS
- EQUIPMENT PACKAGE LIMIT
- ELECTRIC (ELECTRONIC) SIGNAL
- PNEUMATIC SIGNAL
- CAPILLARY LINE
- HYDRAULIC SIGNAL
- SONIC SIGNAL
- HEAT TRACED AND INSULATED
- TELEPHONE LINK
- FUTURE
- EXISTING

DRAWING CONTINUATION LEGEND

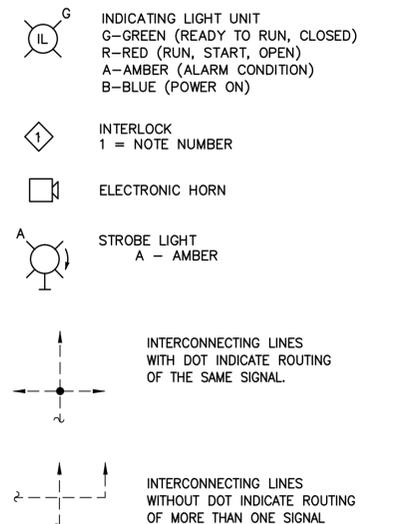
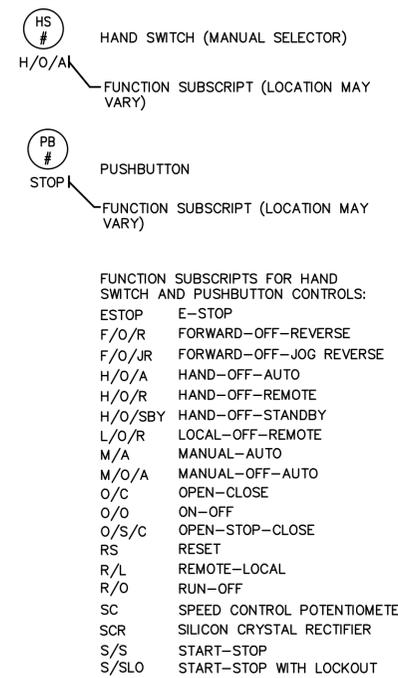
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 CONN: CONNECTION NUMBER
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ABBREVIATIONS

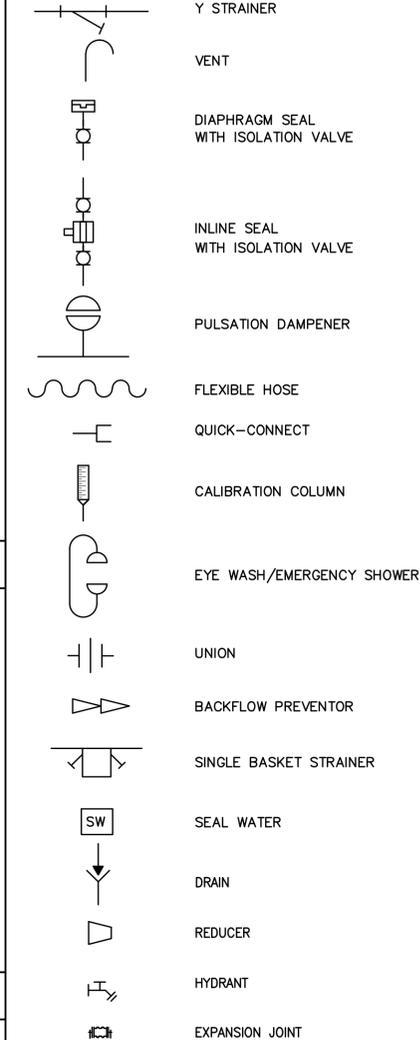
COMM COMMUNICATIONS
UPS UNINTERRUPTIBLE POWER SUPPLY



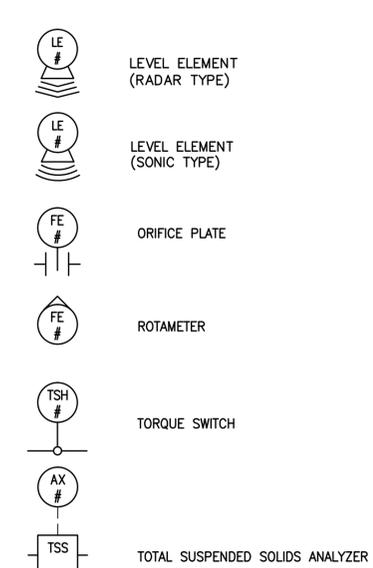
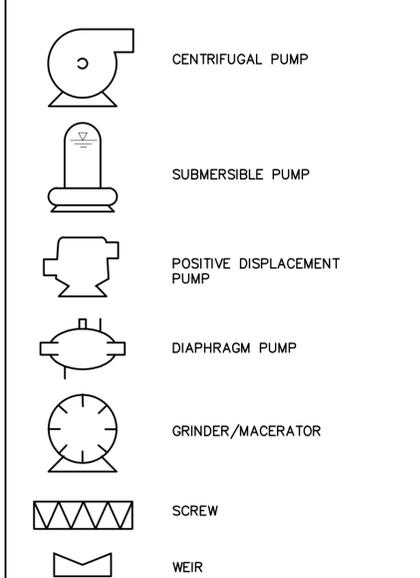
PANEL DEVICE SYMBOLS



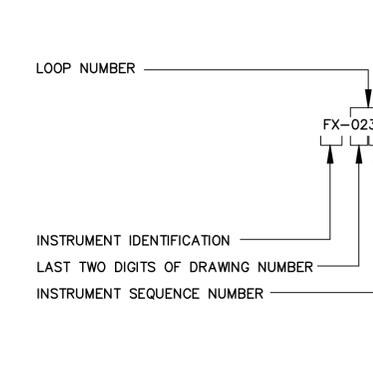
PIPING SYMBOLS



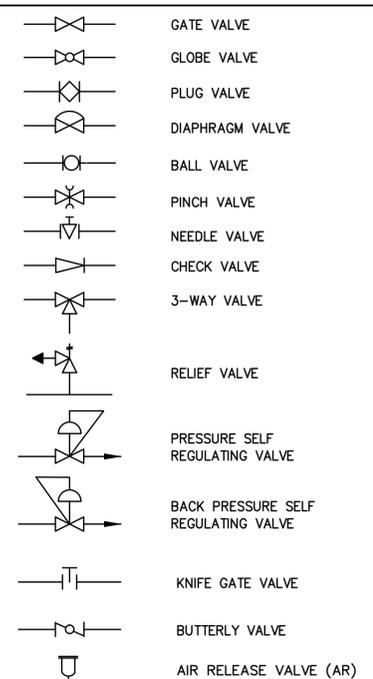
EQUIPMENT SYMBOLS



INSTRUMENT TAGGING SYSTEM



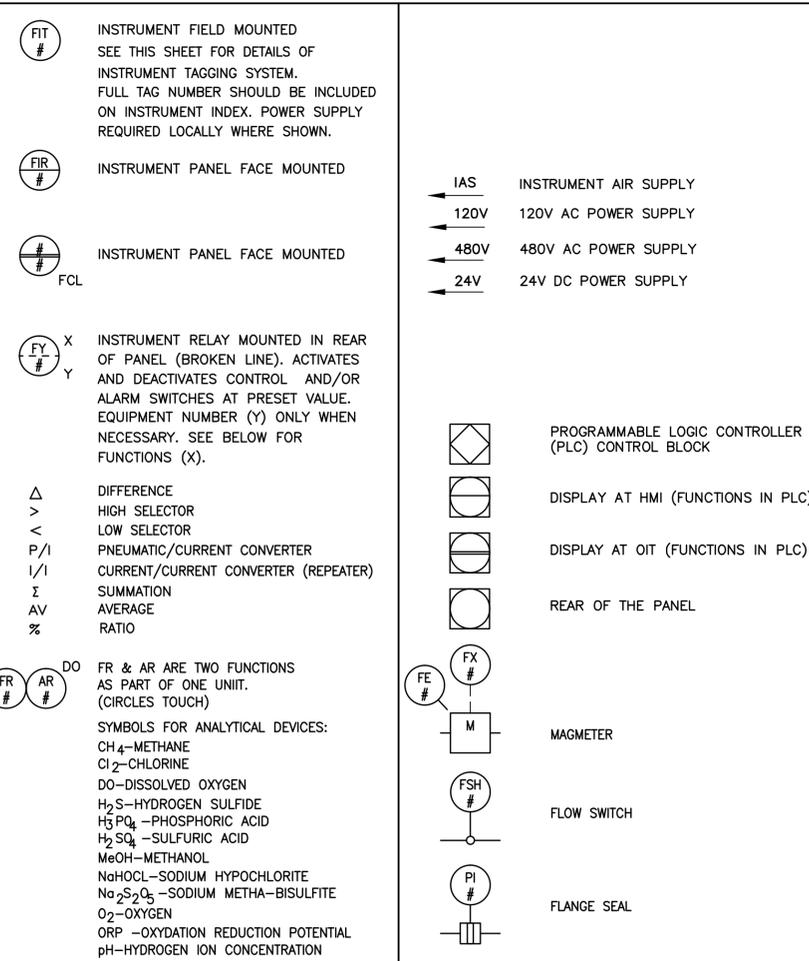
VALVE SYMBOLS



INSTRUMENT IDENTIFICATION LEGEND

FIRST LETTER	SUCCEEDING LETTERS			
	MEASURED OR INITIATING VARIABLE	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS	ALARM		
B	BURNER FLAME	RELAY		
C	CONDUCTIVITY/CONTROL	CONTROLLER/CONVERTER/CAMERA	CLOSE	CLOSED
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL DEVIATION		
E	VOLTAGE (EMF)	ELEMENT/VOLTAGE		
F	FLOW RATE	RATIO		
G	THICKNESS	GAGE		
H	HAND (MANUALLY INITIATED)			HIGH
I	CURRENT (ELECTRICAL)	INDICATE		
J	POWER			
K	CONSISTENCY			
L	LEVEL	LIGHT (PILOT)		LOW
M	MOISTURE OR HUMIDITY	MONITOR		
N	TREND / TIME	NOT USED	NOT USED	NOT USED
O	OPACITY	ORIFICE (RESTRICTION)		OPEN
P	PRESSURE/PNEUMATIC/DIFF. PRESS.	PNEUMATIC/PRESSURE		
Q	EVENT/QUANTITY/NUMBER	INTEGRATOR		
R	RESTRICTION/RESISTANCE	RECORD/REDUCE	REGULATOR/RECORD	
S	SPEED, FREQUENCY	SWITCH/SELECTOR	SWITCH/SIGNAL	
T	TEMPERATURE/TORQ	TOTALIZER	TOTALIZER	
U	MULTIVARIABLE	MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VISCOSITY/VIDEO	VALVE DAMPER OR LOUVER	VALVE DAMPER OR LOUVER	
W	WEIGHT OR FORCE	WELL		
X	UNCLASSIFIED	TRANSMITTER	TRANSMITTER	TRANSMITTER
Y	STATUS	COMPUTING		
Z	POSITION	DRIVE ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT		

BASE INSTRUMENTATION SYMBOLS



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SECTION 01 11 13

SUMMARY OF WORK

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Table of Articles for this Section is:

<u>Article</u>	<u>Title</u>
1.1	Section Includes
1.2	Location and Description of Work
1.3	Other Construction Contracts
1.4	Work By Others
1.5	Work By Owner
1.6	Owner-furnished Equipment and Materials
1.7	Assigned Procurement Contracts
1.8	Sequence and Progress of Work
1.9	Contractor's Use of Site
1.10	Easements and Rights-of-Way
1.11	Notices to Owners and Authorities of Properties Adjacent to the Work
1.12	Salvage of Equipment and Materials
1.13	Partial Utilization by Owner

1.2 LOCATION AND DESCRIPTION OF WORK

- A. The Work is located at the site of the City of Venice Water Treatment Plant (WTP) at 200 N. Warfield Ave. Venice, FL 34285.
- B. The work to be performed by the CONTRACTOR generally includes furnishing of all labor, equipment, materials, tools and services required to replace, test, and startup the proposed City of Venice WTP high service pumps. The specific areas of work include, but are not limited to items 1-8 listed below, along with associated site work, yard piping, valves, support systems and appurtenances, structural, painting, electrical, instrumentation, tie-ins to existing systems, and testing.
1. Removal of the three existing high service pumps and associated piping valves and appurtenances. Pump replacement shall be phased in accordance with Section 01 14 16, Coordination with Owner's Operations.
 2. Draining and inspection of existing pump cans.
 3. Depending on condition of pump cans, contractor shall sandblast and recoat pump can walls if required.
 4. Installation of new, similar high capacity service pumps and motors.

5. Replacement of silent check valves with new swing check valves on the discharge of each pump's piping assembly. Replacement of associated ARVs, pressure switches/gauges, and appurtenances with similar units. Testing of each new pump.
 6. Disassembly and cleaning of the surge anticipator valve to be followed by rebuild and conversion of the surge anticipator valve to a pressure relief and surge anticipator valve by implementation of a new pilot system.
 7. Replacement of the electrical wiring from the VFDs to the pump motors and from the VFDs to the MCCs; existing conduits will be reused.
 8. Removal and disposal of old high service pumps, with the exception of the rebuilt pump, per the OWNER's instruction.
- C. The CONTRACTOR shall perform system startup and testing. The CONTRACTOR shall be responsible for coordinating and completing the overall system startup and testing. The CONTRACTOR is responsible for providing all labor equipment and materials for conducting systems startup and testing. The CONTRACTOR is responsible for ensuring that all provisions for the Contract Documents have been properly executed and successfully completed.
- D. The Contract Documents indicate existing conditions only where they impact the proposed facility modifications and equipment installation. It is the responsibility of the CONTRACTOR to field verify existing and proposed equipment locations and notify the ENGINEER of any conflicts prior to construction. The contract documents have been developed to indicate the final location of equipment, piping, conduits and miscellaneous items associated with this project. The CONTRACTOR is responsible for developing and updating a construction schedule, which will allow installation of equipment in phases. Startup, testing and final certification of the project shall be included in the schedule.
- E. CONTRACTOR'S Duties:
1. Cooperate with the ENGINEER, other contractors for other projects, and the OWNER.
 2. Except as specifically noted, provide and pay for:
 - a. Labor, materials and equipment.
 - b. Tools, construction equipment, and machinery.
 - c. Water and utilities required for construction.
 - d. Other facilities and services necessary for the proper execution and completion of the Work.
 3. Secure and pay for, as necessary for the proper execution and completion of the Work, and as applicable at time of receipt of bids:
 - a. Permits.
 - b. Government fees.
 - c. Licenses.
 4. Give required notices in writing.
 5. Comply with codes, ordinances, rules, regulations, orders, and other

6. Legal requirements of public authorities that bear on performance of Work.
7. Promptly submit written notice to ENGINEER of observed variance of Contract Documents from legal requirements.
8. Enforce strict discipline and good order among employees. Do not employ persons lacking the required skills for their assigned task.
9. The CONTRACTOR shall furnish personnel and equipment that will be efficient, appropriate, and large enough to secure a satisfactory quality of work and a rate of progress that will ensure the completion of the work within the time stipulated.
10. The CONTRACTOR shall be responsible for restoring all disturbed property, resulting from his construction activities, or the activities of his sub-consultant, at no additional cost to the OWNER.
11. The CONTRACTOR shall confine his activities to the site(s) designated by the OWNER for the Work or for materials storage.

F. Contracting Method: Work shall be constructed under one prime contract.

1.3 OTHER CONSTRUCTION CONTRACTS

- A. Other construction contracts have been or will be awarded by Owner that are in close proximity to or border on the Work of this Contract. Work under these other contracts is briefly described as follows:
1. Odor control system improvements project – This project includes replacing the current degasifier at the plant with 2 new degasifiers and a new biotrickling filter. This work is occurring on the east side of the clearwell.
 2. CO₂ feed system improvements project – This project features replacement of the current CO₂ feed system and injection assembly. This work is occurring northeast of the administration building, adjacent to the work for the odor control system improvements project.
 3. ARV replacement of finished water header outside of administration building.

1.4 WORK BY OTHERS (NOT USED)

1.5 WORK BY OWNER (NOT USED)

1.6 OWNER-FURNISHED EQUIPMENT AND MATERIALS (NOT USED)

1.7 ASSIGNED PROCUREMENT CONTRACTS (NOT USED)

1.8 SEQUENCE AND PROGRESS OF WORK

- A. Requirements for sequencing and coordinating with Owner's operations, including maintenance of plant operations during construction, and requirements for tie-ins and shutdowns, are in Section 01 14 16, Coordination with Owner's Operations.

1.9 CONTRACTOR'S USE OF SITE

- A. CONTRACTOR will only have access to the portions of the Site shown for storage and operations of workers.
- B. Move stored products that interfere with operations of OWNER, other contractors, and others performing work for OWNER.
- C. Site access shall be directed by the OWNER and ENGINEER.

1.10 EASEMENTS AND RIGHTS-OF-WAY

- A. Easements and rights-of-way will be provided by OWNER in accordance with the General Conditions. Confine construction operations within OWNERS's property, public rights-of-way, easements obtained by OWNER, and the limits shown. Use care in placing construction tools, equipment, excavated materials, and materials and equipment to be incorporated into the Work to avoid damaging property and interfering with traffic. Do not enter private property outside the construction limits without permission from the owner of the property.
- B. On Private Property:
 - 1. General limits of easements are shown on the Drawings.

1.11 NOTICES TO OWNERS AND AUTHORITIES OF PROPERTIES ADJACENT TO THE WORK

- A. Notify owners of adjacent property and utilities when prosecution of the Work may affect their property, facilities, or use of property.
- B. When it is necessary to temporarily obstruct access to property, or when utility service connection will be interrupted, provide notices sufficiently in advance to enable affected persons to provide for their needs. Conform notices to Laws and Regulations and, whether delivered orally or in writing, include appropriate information concerning the interruption and instructions on how to limit inconvenience caused thereby.
- C. Notify utility owners and other concerned entities at least 48 hours prior to cutting or closing streets or other traffic areas or excavating near Underground Facilities or exposed utilities.

1.12 SALVAGE OF EQUIPMENT AND MATERIALS

- A. Existing equipment and materials removed and not shown or specified to be reused in the Work will become Contractor's property.

- B. Existing equipment and materials removed by Contractor shall not be reused in the Work, except where so specified or indicated.
- C. Carefully remove in manner to prevent damage all equipment and materials specified or indicated to be salvaged and reused or to remain property of Owner. Store and protect salvaged items specified or indicated to be used in the Work. Replace in kind or with new items equipment, materials, and components damaged in removal, storage, or handling through carelessness or improper procedures.
- D. Contractor may furnish and install new items, with Engineer's approval, instead of those specified or indicated to be salvaged and reused, in which case such removed items will become Contractor's property.

1.13 PARTIAL UTILIZATION BY OWNER (NOT USED)

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

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SECTION 01 14 16

COORDINATION WITH OWNER'S OPERATIONS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
1. This Section includes requirements for coordinating with OWNER's operations during the Work, and includes requirements for tie-ins and shutdowns necessary to complete the Work without impact on OWNER's operations except as allowed in this Section.
 2. CONTRACTOR shall provide labor, materials, tools, equipment and incidentals shown, specified and required to coordinate with OWNER's operations during the Work.
- B. Coordination:
1. Review installation procedures under other Specification sections and coordinate Work that must be performed with or before the Work specified in this Section.
- C. Related Sections:
1. Section 01 11 13, Summary of Work.
 2. Section 40 60 05, Instrumentation and Control for Process Systems.
 3. Section 43 21 13.33, Centrifugal Vertical Lineshaft Pumps.
- D. Except for shutdowns specified in this Section, perform the Work such that OWNER's facility remains in continuous satisfactory operation during the Project. Schedule and conduct the Work such that the Work does not: impede OWNER's production or processes, create potential hazards to operating equipment and personnel, reduce the quality of the facility's products or effluent, or cause odors or other nuisances.
- E. Work not specifically covered in this Section or in referenced Sections may, in general, be completed at any time during regular working hours in accordance with the General Conditions and Supplementary Conditions, subject to the requirements in this Section.
- F. CONTRACTOR has the option of providing additional temporary facilities that can eliminate or mitigate a constraint without additional cost to OWNER, provided such additional temporary facilities: do not present hazards to the public, personnel, structures, and equipment; that such additional temporary facilities do not adversely affect OWNER's ability to comply with Laws and Regulations, permits, and operating requirements; that such temporary facilities do not

generate or foster the generation of odors and other nuisances; and that requirements of the Contract Documents are fulfilled.

- G. Coordinate shutdowns with OWNER and ENGINEER. When possible, combine multiple tie-ins into a single shutdown to minimize impacts on OWNER's operations and processes.
- H. Do not shut off or disconnect existing operating systems, unless accepted by ENGINEER in writing. Operation of existing equipment will be by OWNER unless otherwise specified or indicated. Where necessary for the Work, CONTRACTOR shall seal or bulkhead OWNER-operated gates and valves to prevent leakage that may affect the Work, OWNER's operations, or both. Provide temporary watertight plugs and bulkheads as required. After completing the Work, remove seals, plugs, and bulkhead to satisfaction of ENGINEER.
- I. Bypassing:
 - 1. Diversion of flows around treatment processes is not allowed.

1.2 SUBMITTALS

- A. Action Submittals: Submit the following:
 - 1. Substitute Sequence Submittal: When deviation from specified sequence is proposed, provide submittal explaining in detail the proposed sequence change and its effects, including evidence that OWNER's operations will not be adversely affected by proposed change. List benefits of proposed sequence change, including benefits to Progress Schedule. Submit in accordance with Section 01 25 00, Substitution Procedures.
- B. Informational Submittals: Submit the following:
 - 1. Shutdown Planning Submittal:
 - a. For each shutdown, submit an inventory of labor and materials required to perform the shutdown and tie-in tasks, an estimate of time required to accomplish the complete shutdown including time for OWNER to take down and start up existing equipment, systems, or conduits, and written description of steps required to complete the Work associated with the shutdown.
 - b. Furnish submittal to ENGINEER at least thirty days prior to proposed shutdown start date. Do not start shutdown until obtaining ENGINEER's acceptance of shutdown planning submittal.
 - 2. Shutdown Notification: After acceptance of shutdown planning submittal and prior to starting the shutdown, provide written notification to OWNER and ENGINEER of date and time each shutdown is to start. Provide notification at least 72 hours in advance of each shutdown.

1.3 GENERAL CONSTRAINTS

- A. Specified in the Contract Documents are the sequence and shutdown durations, where applicable, for OWNER'S equipment, systems, and conduits that are to be taken out of service temporarily for the Work. New equipment, materials, and systems may be used by OWNER after the specified field quality controls and testing are successfully completed and the materials or equipment are Substantially Complete.
- B. The following constraints apply to coordination with OWNER's operations:
1. CONTRACTOR shall maintain two high service pumps in service at all times during construction unless otherwise specifically permitted in these specifications or approved by OWNER.
 2. Operational Access: OWNER'S personnel shall have access to equipment and areas that remain in operation.
 3. Schedule and perform equipment and system start-ups for Monday through Thursday. Equipment and systems shall not be placed into operation on Friday, Saturday, and Sunday without prior approval of OWNER.
 4. Dead End Valves or Pipe: Provide blind flanges, watertight bulkheads, or valve at temporary and permanent terminuses of pipes and conduits. Blind flanges and bulkheads shall be suitable for the service and braced and blocked, as required, or otherwise restrained as directed by ENGINEER. Temporary valves shall be suitable for their associated service. Where valve is provided at permanent terminus of pipe or conduit, also provide on downstream side of valve a blind flange with drain/flushing connection.
 5. OWNER will assist CONTRACTOR in operating valves. CONTRACTOR shall be responsible for dewatering existing pipes, pump cans and other work areas. Maintain clean and dry work area by pumping and properly disposing of fluid that accumulates in work areas.
 6. Cleaning, Draining, and Inspection of Pump cans:
 - a. CONTRACTOR shall dewater existing pump cans and perform a video inspection to confirm the condition of each can.
 - b. CONTRACTOR shall remove liquids and solids and dispose of them at appropriate location at the Site as directed by ENGINEER. Discharge of fluids across floors is not allowed.
 - c. If drainage point is not available on the piping or conduit to be drained, provide a wet tap using tapping saddle and valve or other method approved by ENGINEER. Uncontrolled spillage of contents of pipes or conduits is not allowed.
 - d. Spillage shall be brought to ENGINEER's attention immediately, both verbally and in writing, and reported in accordance with Laws and Regulations. CONTRACTOR shall wash down spillage to drains and flush the system to prevent clogging and odors. If spillage is not suitable for discharge to the drainage system, such as chemical spills, as determined by ENGINEER, CONTRACTOR shall remove spillage by other method, such as vactor truck, acceptable to ENGINEER.

1.4 SEQUENCE OF WORK

- A. Perform the Work in the specified sequence. Certain phases or stages of the Work may require working 24-hour days or work during hours outside of regular working hours. Work may be accelerated from a later stage to an earlier stage if OWNER's operations are not adversely affected by proposed sequence change, with ENGINEER's acceptance. Stages specified in this Article 1.4 are sequence-dependent.
1. Stage I: Stage equipment for project activities.
 2. Stage II: Rewire and install the new junction box for the pump pressure switches.
 3. Stage III: Rebuild and convert existing 14" surge relief valve to a pressure relief and surge anticipator valve.
 4. Stage IV: Dewater and video inspect the pump cans at pedestal nos. 4 and 5, where no pumps currently exist. If necessary, sandblast and recoat cans if found in poor condition. Install new pumps, motors, valves and appurtenances at pedestals nos. 4 and 5. Transfer required electrical components, wiring and conduit for new HS pump no. 1. Test HS pump no. 1 as specified. HS pump no. 1 must be tested and accepted before required electrical work is performed on HS pump no. 2. HS pump no. 2 shall be tested and accepted before installing HS pump no. 3.
 5. Stage V: After HS pump nos. 1 and 2 are successfully installed, tested and accepted, uninstall existing HS pump at pedestal no. 3. Dewater and video inspect the pump can at pedestal no. 3. If necessary, sandblast and recoat can if found in poor condition. Install new HS pump no. 3, motor, valves, appurtenances and associated electrical work. Perform all required acceptance testing on HS pump no. 3.
 6. Stage VI: Uninstall the remaining two old pumps at pedestal nos. 1 and 2. Dewater and video inspect the pump cans; sandblast and recoat if necessary. Return the old pumps to their respective pedestals (do not dispose).
 7. Stage VII: Perform site remediation to all areas impacted by construction.

1.5 TIE-INS

- A. Table 01 14 16-A in this Section lists connections by CONTRACTOR to existing facilities. Table 01 14 16-A may not include all tie-ins required for the Work; CONTRACTOR shall perform tie-ins required to complete the Work. For tie-ins not included in Table 01 14 16-A, obtain requirements for tie-ins from ENGINEER.

1.6 SHUTDOWNS

A. General:

1. Terminology: A “shutdown” is when a portion of the normal operation of OWNER’s facility, whether equipment, systems, piping, or conduit, has to be temporarily suspended or taken out of service to perform the Work.
2. Work that may interrupt normal operations shall be accomplished at times convenient to OWNER.
3. Furnish at the Site, in close proximity to the shutdown and tie-in work areas, tools, equipment, spare parts and materials, both temporary and permanent, necessary to successfully complete the shutdown. Complete to the extent possible, prefabrication of piping and other assemblies prior to the associated shutdown. Demonstrate to ENGINEER’s satisfaction that CONTRACTOR has complied with these requirements before commencing the shutdown.
4. If CONTRACTOR’s operations cause an unscheduled interruption of OWNER’s operations, immediately re-establish satisfactory operation for OWNER.
5. Unscheduled shutdowns or interruptions of continued safe and satisfactory operation of OWNER’s facilities that result in fines or penalties by authorities having jurisdiction shall be paid solely by CONTRACTOR if, in ENGINEER’s opinion, CONTRACTOR did not conform to the requirements of the Contract Documents, or was negligent in the Work, or did not exercise proper precautions in conducting the Work.
6. Shutdowns shall be in accordance with Table 01 14 16-B of this Section. Work requiring service interruptions for tie-ins shall be performed during scheduled shutdowns.
7. Temporary, short-term shutdowns of smaller piping, conduits, equipment, and systems may not be included in Table 01 14 16-B. Coordinate requirements for such shutdowns with ENGINEER and OWNER.

- B. Shutdowns of Electrical Systems: Comply with Laws and Regulations, including the National Electric Code. CONTRACTOR shall lock out and tag circuit breakers and switches operated by OWNER and shall verify that affected cables and wires are de-energized to ground potential before shutdown Work is started. Upon completion of shutdown Work, remove the locks and tags and notify ENGINEER that facilities are available for use.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 DETAILED SHUTDOWN REQUIREMENTS

- A. Shutdown A:
 - 1. General:
 - a. Affected Equipment Operating Prior to Shutdown: High Service Pump Station.
 - b. Equipment Operating During Shutdown: Full plant except High Service Pump Station. Elevated storage tanks will be used for distribution (shutdown not to exceed 4 hours) while high service pumps are shutdown.
 - c. Equipment Out of Service During Shutdown: High Service Pumps and appurtenances.
 - d. Procedure: Partial system shutdown.
 - 2. Prior to Shutdown:
 - a. Obtain ENGINEER's acceptance of proposed shutdown planning submittal and shutdown notification submittal.
 - b. Bring necessary piping, couplings, valves, equipment, and appurtenances to the work areas.
 - c. Assist OWNER in preparing to take equipment and conduits temporarily out of service.
 - d. Coordinate other tie-ins to be performed simultaneously.
 - 3. During Shutdown:
 - a. Rewire and install the new junction box for the pump pressure switches.

3.2 SCHEDULES

- A. The schedules listed below, following the "End of Section" designation, are part of this Specification section:
 - 1. Table 01 14 16-A, Schedule of Tie-ins.
 - 2. Table 01 14 16-B, Schedule of Shutdowns.

++ END OF SECTION ++

**TABLE 01 14 16-A
SCHEDULE OF TIE-INS**

Tie-In No.	New Line Size and Service	Existing (Connecting) Line Size & Service	Tie-In Building/Location	Construction Stage	Remarks
1	16" high service pump discharge piping	Existing 16" high service pump discharge pipe downstream of isolation gate valve	HSP Canopy Structure	IV, V	

**TABLE 01 14 16-B
SCHEDULE OF SHUTDOWNS**

Shut-down No.	Process Equipment and Service Lines Out-of-Service During Shutdown	Process Equipment In Operation During Shutdown	Stage Nos.	Maximum Duration
A	High Service Pump Station	Full Plant	IV	4 hours

SECTION 01 22 13

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Items listed starting in Article 1.4 of this Section refer to and are the same pay items listed in the Bid Form and constitute all pay items for completing the Work. No direct or separate payment will be made for providing miscellaneous temporary or accessory works, plant services, CONTRACTOR's or ENGINEER's field offices, layout surveys, sanitary requirements, testing, safety provisions and safety devices, submittals and record drawings, water supplies, power and fuel, traffic maintenance, removal of waste, security, coordination with OWNER's operations, information technology (including hardware, software, and services) required during construction, bonds, insurance, or other requirements of the General Conditions, Supplementary Conditions, General Requirements, and other requirements of the Contract Documents. Compensation for all services, items, materials, and equipment shall be included in prices stipulated for lump sum pay items listed in this Section and included in the Contract.
- B. Each lump sum bid price shall include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

1.2 ENGINEER'S ESTIMATE OF QUANTITIES

- A. ENGINEER's estimated quantities for items of Work, as included in the Contract, are approximate only and are included solely for purpose of comparing Bids and pricing. OWNER does not expressly or by implication agree that nature of materials encountered below the ground surface or actual quantities of material encountered or required will correspond with the quantities included in the Contract at the time of award and reserves right to increase or decrease quantities or to eliminate quantities as OWNER may deem necessary.

1.3 RELATED PROVISIONS

- A. Payments to CONTRACTOR: Refer to General Conditions and Agreement.
- B. Changes in Contract Price: Refer to General Conditions.
- C. Schedule of Values: Refer to Section 01 29 73, Schedule of Values.

1.4 GENERAL CONSTRUCTION

- A. Item 1 – Mobilization/Demobilization:
1. Measurement: Lump sum payment for Item 1 will be full compensation for completing all work associated with mobilization and demobilization as shown and specified. Seventy-five percent (75%) will be paid upon services rendered for mobilization and the remaining twenty-five percent (25%) will be paid upon services rendered for demobilization.
 2. Payment: The lump sum price bid shall include all expenses related to the amassing of all labor, equipment, temporary offices, transportation, storage and materials required for the construction of the project, as shown on the Drawings and as specified for mobilization. Demobilization shall include removal of equipment and temporary offices as well as cleaning of site.
- B. Item 2 – Removal of Existing and Replacement with New High Service Pumps, Valves and Appurtenances. Rebuild and convert pressure relief valve to pressure relief and surge anticipator valve. Inspect and clean pump cans:
1. Measurement: Lump sum payment for Item 2 will be full compensation for completing all demolition and construction work associated with the project as shown and specified.
 2. Payment: The lump sum price bid shall include removal of the existing high service pumps, piping, valves and appurtenances; existing electrical equipment associated with the existing high service pumps; and all concrete retrofitting activities. The lump sum price bid shall also include installation of new high service pumps, piping, valves, and appurtenances, wiring, transfer of VFDs to new pumps, rebuilding/upgrade of the existing surge anticipator valve to a dual pressure relief and surge anticipator valve, and start-up and performance testing. The lump sum bid price shall include pump out and subsequent video inspection of each suction can.
- C. Item 3 – Sandblast and Recoat Pump Can:
1. Measurement: This item includes sandblasting and recoating each pump can complete as shown and specified. The number of cans that will require sandblasting and recoating will be determined after completing the video inspection of each can as part of pay Item 2.
 2. Payment: Payment will be per each at the unit price as shown in the Bid Proposal. The unit price bid shall include sandblasting and recoating of the pump cans. CONTRACTOR shall be paid only for those cans that require sandblasting and recoating based on the video inspection of each can and as agreed to with the OWNER and ENGINEER.
- D. Item 4 – Face off an existing can machine flat:
1. Measurement: This item includes machining the face of each pump can complete as shown and specified. The number of cans that will require

machining will be determined after completing the inspection of each can as part of pay Item 2.

2. Payment: Payment will be per each at the unit price as shown in the Bid Proposal. The unit price bid shall include machining flat the pump cans. CONTRACTOR shall be paid only for those cans that require machining based on the inspection of each can and as agreed to with the OWNER and ENGINEER.
- E. Item 5 – Owner’s Contingency Allowance for additional Civil, Mechanical, Electrical, Instrumentation, and Structural Work, as needed:
1. Measurement: Includes a stipulated amount available as reserve for sole use by OWNER to cover unanticipated costs including, minor items unforeseen and necessary but not included in bid, unanticipated conflicts and/or design changes required during construction, and minor increases to existing bid item quantities, which are necessary for safe and timely completion of the Work.
 2. Payment: Payment for Work authorized under Item 4 will be full compensation for providing all Work authorized under the contingency allowance, complete as shown, indicated, or directed by ENGINEER, only upon written authorization from OWNER. Work authorized under contingency allowance may be included in subsequent Application(s) for Payment, as applicable, following authorization of and performance of contingency allowance Work.
- F. Item 6 – Contingency Allowance for Required Permitting Fees:
1. Measurement: Payment will be made to the Contractor based on actual invoiced amounts paid by the Contractor to obtain required Building Permits and inspections and for the Site Preparation permit.
 2. Payment:
 - a. Payment for Work authorized under Item 5 will be full compensation for providing all fees authorized under the permitting allowance, complete as shown, indicated, or directed by ENGINEER. Fees authorized under permitting allowance may be included in subsequent Application(s) for Payment, as applicable, following authorization of and performance of permitting allowance fees.
 - b. Payment for Work authorized under Item 5 will not be compensation for Contractor markups or premiums, fees incurred due to Contractor’s negligence, permits required for items for the Contractor’s convenience, but not required by the Contract Documents or Engineer, fees and costs associated with utility services to temporary construction trailers and electricity required by Contractor during construction activities.

1.5 ADDITIVE ALTERNATES

- A. Additive alternates may be added to the contract if authorized by the OWNER for inclusion as part of the project. Additive alternates include:
- B. Item AA-1: Sandblast and recoat pump can.
 - 1. Measurement: This item includes all work associated with the sandblasting and recoating of a pump can.
 - 2. Payment: Payment will be per each can at the unit price as shown in the bid proposal.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

SECTION 01 25 00

SUBSTITUTION PROCEDURES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope: Section includes:
1. Administrative and procedural requirements for selecting products for the Project.
 2. Procedural requirements for product substitutions.
 3. Procedural requirements for substitute construction methods or procedures, when construction methods or procedures are specified.

1.2 TERMINOLOGY

- A. The following words or terms are not defined but, when used in this Section, have the following meaning:
1. “Products” includes materials, equipment, machinery, components, fixtures, systems, and other goods incorporated in the Work. Products do not include machinery and equipment used for preparing, fabricating, conveying, erecting, or installing the Work. Products include OWNER-furnished goods incorporated in the Work where use of such goods is specifically required in the Contract Documents.

1.3 PRODUCT SUBSTITUTIONS

- A. Requests for approval of substitute products or items will be considered for a period of 45 days after the Effective Date of the Agreement. After end of specified period, requests will be considered only in case of unavailability of a specified product or other conditions beyond CONTRACTOR’s control.
- B. Procedure:
1. Submit number of copies of request for substitution as specified for Shop Drawings and other submittals in Section 01 33 00, Submittal Procedures.
 2. Submit separate request for each substitution.
 3. Submit substitution request using forms attached to this Section by completing all information requested on the forms, and enclose with the forms supplementary information as required. In addition to requirements of the General Conditions and information required on substitution request forms, include with request the following:
 - a. Product identification, including manufacturer’s name and address.

- b. Manufacturer's literature with product description, performance and test data, and reference standards with which product complies.
- c. Samples, if appropriate.
- d. Name and address of similar projects on which product was used, and date of installation.

1.4 SUBSTITUTE CONSTRUCTION METHODS OR PROCEDURES

- A. Where construction methods or procedures are specified, for a period of 60 days after the Effective Date of the Agreement, ENGINEER will consider CONTRACTOR's written requests for substitute construction methods or procedures specified.
- B. Procedure:
 1. Submit number of copies of request for substitution as specified for Shop Drawings and other submittals in Section 01 33 00, Submittal Procedures.
 2. Submit separate request for each substitution.
 3. Submit substitution request using forms attached to this Section by completing all applicable information requested on the forms, and enclose with the forms supplementary information as required. In addition to requirements of the General Conditions and information required on substitution request forms, include with request the following:
 - a. Detailed description of proposed method or procedure.
 - b. Itemized comparison of the proposed substitution with the specified method or procedure.
 - c. Drawings illustrating method or procedure.
 - d. Other data required by ENGINEER to establish that proposed substitution is equivalent to specified method or procedure.

1.5 CONTRACTOR'S REPRESENTATION AND ACCEPTANCE

- A. In submitting request for substitution, CONTRACTOR represents that:
 1. CONTRACTOR has investigated proposed substitution and determined that it is equivalent to item, product, method, or procedure specified, as applicable.
 2. CONTRACTOR will provide the same or better guarantees or warranties for proposed substitution as for the specified product, manufacturer, method, or procedure, as applicable.
 3. CONTRACTOR waives all Claims for additional costs or extension of time related to proposed substitution that subsequently may become apparent.
- B. A proposed substitution will not be accepted for review if:
 1. Approval would require changes in design concept or a substantial revision of the Contract Documents.
 2. Approval would delay completion of the Work or the work of other contractors.

3. Substitution request is indicated or implied on a Shop Drawing or other submittal, or on a request for interpretation or clarification, and is not accompanied by CONTRACTOR's formal request for substitution.
- C. If ENGINEER does not approve the proposed substitute, CONTRACTOR shall provide the specified product, manufacturer, method, or procedure, as applicable.
 - D. Approval of a substitution request will not relieve CONTRACTOR from requirement for submitting Shop Drawings as set forth in the Contract Documents.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 SUPPLEMENTS

- A. The forms listed below, following the “End of Section” designation, are part of this Specification Section:
 1. Substitution Request Form (two pages).
 2. Product Substitution Checklist (one page).

++ END OF SECTION ++

SUBSTITUTION REQUEST

Project: _____ Substitution Request Number: _____

From: _____
To: _____ Date: _____

Engineer Proj. No. _____
Re: _____ Contract For: _____

Specification Title: _____ Description: _____
Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____
Manufacturer: _____ Address: _____ Phone: _____
Trade Name: _____ Model No.: _____
Installer: _____ Address: _____ Phone: _____

History: New product 1-4 years old 5-10 years old More than 10 years old

Differences between proposed substitution and specified product: _____

Point-by-point comparative data attached — REQUIRED BY THE CONTRACT DOCUMENTS

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Engineer: _____
Address: _____ Owner: _____
_____ Date Installed: _____

Proposed substitution affects other parts of Work: No Yes; explain _____

Savings to Owner for accepting substitution: _____ (\$ _____)
(attach detailed, itemized estimate)

Proposed substitution changes Contract Time: No Yes [Add] [Deduct] _____ days.
(clarify whether change is to Substantial Completion, Milestone, or time for readiness for final payment)

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

SUBSTITUTION REQUEST

(Continued)

- Substitute product, method, or procedure is subject to payment of licensing fee or royalty (check if "yes" and attach information)
- Substitute product, method, or procedure is patented or copyrighted (check if "yes" and attach information)

The undersigned certifies:

- Representations in the General Conditions and in Section 01 25 00, Substitution Procedures, regarding substitutions are valid.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay Progress Schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for Engineer's review and changes, if any, to the design and Contract Documents, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments:

ENGINEER'S REVIEW AND ACTION (FOR ENGINEER'S USE ONLY)

- Substitution approved.
- Substitution approved as noted.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

Additional Comments: Contractor Subcontractor Supplier Manufacturer Engineer
 Other:

Adapted from CSI Form No. 13.0B, 2004 edition

PRODUCT SUBSTITUTION CHECKLIST

Date: _____

Re: _____

Engineer Proj No.: _____

Manufacturer's Project No.: _____

Filing No.: _____

Contract For: _____

Product Equivalence:

- Is the submitted product equivalent to the specified item? _____
- Does it serve the same function? _____
- Does it have the same dimensions? _____
- Does it have the same appearance? _____
- Will it last as long? _____
- Does it comply with the same codes, and standards and performance requirements? _____
- Has the product been used locally, and where are the projects? _____

- Has a problem occurred with the product, and what was the remedy? _____

Effect on the Project:

- Will the substitution affect other aspects of the construction? _____
- Are any details affected and are changes required? _____
- What is the cost of the changes? _____
- Who pays for the required changes? _____
- Is construction time affected? _____

Effect on the Warranty:

- How does the proposed warranty differ from the specified warranty? _____

- Does the manufacturer have a track record of standing behind the warranty? _____

Adapted from CSI Form No. 20.3, 1998 edition

SECTION 01 29 73

SCHEDULE OF VALUES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Submit to ENGINEER for acceptance a Schedule of Values that allocates cost to each item of the Work. Schedule of Value list of line items shall correspond to each aspect of the Work, establishing in detail the portion of the Contract Price allocated to each major component of the Work.
- B. Upon request of ENGINEER, support values with data that substantiate their correctness.
- C. Submit preliminary Schedule of Values to ENGINEER for initial review. CONTRACTOR shall incorporate ENGINEER's comments into the Schedule of Values and resubmit to ENGINEER. ENGINEER may require corrections and re-submittals until Schedule of Values is acceptable.
- D. Schedule of Values and the Progress Schedule updates specified in Section 01 32 16, Progress Schedule, shall be basis for preparing each Application for Payment. Schedule of Values may be used as a basis for negotiating price of changes, if any, in the Work.
- E. Include in Schedule of Values unit price payment items with their associated quantity. Provide in the Schedule of Values detailed breakdown of unit prices when required by ENGINEER.
- F. Include in Schedule of Values itemized list of Work for each major part of the Contract, for each payment item specified in Section 01 22 13, Measurement and Payment.
- G. Requirements for preliminary Schedule of Values and Schedule of Values are:
 - 1. Schedule of Values shall show division of Work between CONTRACTOR and Subcontractors. Line items for Work to be done by Subcontractor shall include the word, "(SUBCONTRACTED)".
 - 2. Schedule of Values shall include breakdown of costs for materials and equipment, installation, and other costs used in preparing the Bid by CONTRACTOR and each Subcontractor. List purchase and delivery costs for materials and equipment for which CONTRACTOR may apply for payment as stored materials.

3. Include separate amounts for each Specification Section in the Contract Documents by structure and work area.
4. Identify each line item with number corresponding to the associated Specification Section number. List sub-items of major products or systems, as appropriate or when requested by ENGINEER.
5. Sum of individual values shown on the Schedule of Values shall equal the total of associated payment item. Sum of payment item totals in the Schedule of Values shall equal the Contract Price.
6. Include in each line item a directly proportional amount of CONTRACTOR's overhead and profit. Do not include overhead and profit as separate item(s).
7. Include separate line item for each allowance, and for each unit price item
8. Include line item for bonds and insurance.
9. Include items for the General Conditions, permits (when applicable), construction Progress Schedule, and other items required by ENGINEER. Include such items in Applications for Payment on schedule accepted by ENGINEER.
10. Line items for Site maintenance such as dust control, compliance with storm water pollution prevention plans and permits, spill prevention control and countermeasures plans, and for construction photographic documentation; temporary utilities and temporary facilities, field offices, temporary controls, field engineering, and similar Work shall be included in the Schedule of Values and proportioned in Applications for Payment throughout duration of the Work.
11. Include separate line items under each appropriate payment item for mobilization and demobilization. Document for ENGINEER the activities included in mobilization and demobilization line items. Payment for mobilization and demobilization activities shall occur in accordance with Section 01 22 13, Measurement and Payment.
12. Include costs for submittals, operations and maintenance manuals, field testing, training of operations and maintenance personnel, and similar Work.
13. Contractor will be required to review with ENGINEER the status of record documents in connection with the Engineer's review of an Application for Payment. Failure to maintain record document current may be just cause for ENGINEER to recommend withholding of payments for Work performed.
14. Coordinate Schedule of Values with resource loading of the Progress Schedule, in accordance with Section 01 32 16, Progress Schedule.

1.2 SUBMITTALS

- A. Informational Submittals: Submit the following:
 1. Submit to ENGINEER four copies of Schedule of Values.
 2. Content of Schedule of Values submittals shall conform to Article 1.1 of this Section.

3. Time Frames for Submittals:
 - a. Submit preliminary Schedule of Values within ten days of date that the Contract Times commence running in accordance with the Notice to Proceed.
 - b. Submittal of the Schedule of Values shall be in accordance with the General Conditions. ENGINEER will not accept Applications for Payment without an acceptable Schedule of Values.
 - c. When required by ENGINEER, promptly submit updated Schedule of Values to include cost breakdowns for changes in the Contract Price.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

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SECTION 01 31 13

PROJECT COORDINATION

PART 1 – GENERAL

1.1 DESCRIPTION

- A. CONTRACTOR shall coordinate the Work, including testing agencies whether hired by CONTRACTOR, OWNER, or others; Subcontractors, Suppliers, and others with whom coordination is necessary, in accordance with the General Conditions, Supplementary Conditions, and this Section, to complete the Work within the Contract Times and in accordance with the Contract Documents.
- B. In accordance with the General Conditions as may be modified by the Supplementary Conditions, CONTRACTOR shall cooperate with and coordinate the Work with other contractors, utility service companies, OWNER's employees working at the Site, and other entities working at the Site, in accordance with Section 01 11 13, Summary of Work.
- C. CONTRACTOR will not be responsible or liable for damage unless damage is through negligence of CONTRACTOR, or Subcontractors, Supplier, or other entity employed by CONTRACTOR.
- D. Attend and participate in all project coordination and progress meetings, and report on the progress of the Work and compliance with the Progress Schedule.
- E. Maintain sufficient competent personnel, drafting and CADD equipment, and supplies at the Site for preparing layout drawings, coordination drawings, and record documents. With the Contract Documents and Shop Drawings, use such coordination drawings as tools for coordinating the Work of various trades. Where such coordination drawings are to be prepared by mechanical, electrical, plumbing, or heating-ventilating-air conditioning Subcontractors and other Subcontractors, ensure that each Subcontractor maintains required personnel and facilities at the Site.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

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SECTION 01 31 19

PRE-CONSTRUCTION CONFERENCE

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
 - 1. A pre-construction conference will be held for the Project.
 - 2. CONTRACTOR shall attend the conference prepared to discuss all items on the agenda.
 - 3. ENGINEER will distribute an agenda, preside at conference, and prepare and distribute minutes to all conference participants and others as requested.

- B. Purpose of conference is to designate responsible personnel, establish working relationships, discuss preliminary schedules submitted by CONTRACTOR, and review administrative and procedural requirements for the Project. Matters requiring coordination will be discussed and procedures for handling such matters will be established.

- C. Date, Time and Location: Conference will be held after execution of the Contract and before Work starts at the Site. ENGINEER will establish the date, time, and location of conference and notify the interested and involved parties.

- D. Prior to the conference, submit the following preliminary schedules in accordance with the General Conditions:
 - 1. Progress Schedule.
 - 2. Schedule of Submittals.
 - 3. Schedule of Values.

- E. CONTRACTOR shall provide information required and contribute appropriate items for discussion. CONTRACTOR shall bring to the conference the following, with sufficient number of copies for each attendee:
 - 1. Preliminary Progress Schedule, as submitted to ENGINEER.
 - 2. Preliminary Schedule of Submittals, as submitted to ENGINEER.
 - 3. Preliminary Schedule of Values, as submitted to ENGINEER.
 - 4. List of emergency contact information, in accordance with Article 1.4 of this Section.

1.2 REQUIRED ATTENDANCE

- A. Representative of each entity attending the conference shall be authorized to act on that entity's behalf.
- B. Contractor Attendance: Conference shall be attended by CONTRACTOR's project manager, Site superintendent, project managers for major Subcontractors, and major equipment Suppliers as CONTRACTOR deems appropriate.
- C. Other attendees will be representatives of:
 - 1. OWNER, if available.
 - 2. ENGINEER.
 - 3. Authorities having jurisdiction over the Work, if available.
 - 4. Utility owners, as applicable.
 - 5. Others as requested by OWNER, CONTRACTOR, or ENGINEER.

1.3 AGENDA

- A. Preliminary Agenda: Be prepared to discuss in detail the topics listed below. Revisions to this agenda, if any, will be furnished to CONTRACTOR prior to conference.
 - 1. Procedural and Administrative:
 - a. Personnel and Teams:
 - 1) Designation of roles and personnel.
 - 2) Limitations of authority of personnel, including personnel who will sign Contract modifications and make binding decisions.
 - 3) Lists of proposed Subcontractors and manufacturers (where applicable).
 - 4) Authorities having jurisdiction.
 - b. Procedures for communications and correspondence.
 - c. Copies of the Contract Documents and availability.
 - d. Subcontractors.
 - e. The Work and Scheduling:
 - 1) Scope of the Work.
 - 2) Contract Times, including Milestones (if any).
 - 3) Phasing and sequencing.
 - 4) Preliminary Progress Schedule.
 - 5) Critical path activities.
 - f. Safety:
 - 1) Responsibility for safety.
 - 2) Designation of Contractor's safety representative.
 - 3) Emergency procedures and accident reporting.
 - 4) Emergency contact information.
 - 5) Confined space entry procedures.

- 6) Hazardous materials communication program.
- 7) Impact of Project on public safety.
- g. Permits.
- h. Review of insurance requirements and insurance claims.
- i. Coordination:
 - 1) Project coordination, and coordination among contractors.
 - 2) Coordination with Owner's operations.
 - 3) Progress meetings.
- j. Products and Submittals:
 - 1) Preliminary Schedule of Submittals.
 - 2) Shop Drawings, Samples, and other submittals.
 - 3) Product options, "or equals", and substitutions.
 - 4) Construction photographic documentation.
- k. Contract Modification Procedures:
 - 1) Requests for interpretation.
 - 2) Clarification notices.
 - 3) Field Orders.
 - 4) Proposal requests.
 - 5) Change Order proposals.
 - 6) Work Change Directives.
 - 7) Change Orders.
 - 8) Procedure for filing Claims.
- l. Payment:
 - 1) Owner's Project financing and funding.
 - 2) Owner's tax-exempt status.
 - 3) Preliminary Schedule of Values, and procedures for measuring for payment.
 - 4) Retainage.
 - 5) Progress payment procedures.
 - 6) Prevailing wage rates and payrolls.
- m. Testing and inspections, including notification requirements.
- n. Disposal of demolition materials.
- o. Record documents.
- p. Preliminary Discussion of Contract Closeout:
 - 1) Procedures for Substantial Completion.
 - 2) Contract closeout requirements.
 - 3) Correction period.
 - 4) Duration of bonds and insurance.
- 2. Site Mobilization (if not covered in a separate meeting):
 - a. Working hours and overtime.
 - b. Field offices, trailers, and staging areas.
 - c. Temporary facilities.
 - d. Temporary utilities and limitations on utility consumption (where applicable).

- e. Utility company coordination (if not done as a separate meeting).
 - f. Access to Site, access roads, and parking for construction vehicles.
 - g. Maintenance and protection of traffic.
 - h. Use of premises.
 - i. Protection of existing property.
 - j. Security.
 - k. Temporary controls, such as sediment and erosion control, noise control, dust control, storm water control, and other such measures.
 - l. Site barriers and temporary fencing.
 - m. Storage of materials and equipment.
 - n. Reference points and benchmarks; surveys and layouts.
 - o. Site maintenance during the Project.
 - p. Cleaning and removal of trash and debris.
 - q. Restoration.
 - r. Site specific safety plan including hurricane preparedness plan.
- 3. General discussion and questions.
 - 4. Next meeting.
 - 5. Site visit, if required.

1.4 EMERGENCY CONTACT INFORMATION

- A. CONTRACTOR shall provide list of emergency contact information for 24-hour use throughout the Project. Emergency contact information shall be updated and kept current throughout the Project. If personnel or contact information change, provide updated emergency contact information list at the next progress meeting.
- B. CONTRACTOR's list of emergency contact information shall include:
 - 1. CONTRACTOR's project manager's office, field office, and cellular numbers.
 - 2. CONTRACTOR's Site superintendent's office, field office, and cellular numbers.
 - 3. CONTRACTOR's foreman's field office, and cellular numbers.
 - 4. Major Subcontractors' and Suppliers' office, and cellular numbers of project manager and foreman (when applicable).
- C. Additional Emergency Contact Information:
 - 1. OWNER's office and cellular telephone numbers.
 - 2. OWNER's central 24-hour emergency telephone number, if applicable.
 - 3. ENGINEER's project manager's office and cellular telephone numbers.
 - 4. Resident Project Representative's office, field office, and cellular telephone numbers for each RPR.
 - 5. Utility companies' 24-hour contact telephone number(s), including gas, water, sewer, oil, telephone, cable television/telecommunications, and other companies or concerns having utilities in the vicinity of the Work.
 - 6. Highway and street owners' 24-hour telephone number(s).

7. Emergency telephone numbers, including: “Emergency: Dial 911”, and ten-digit telephone numbers for the hospital, ambulance, police, and fire department nearest to the Site. Provide names of each of these institutions.
8. Other involved entities as applicable.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

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SECTION 01 32 16

PROGRESS SCHEDULE

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. Prepare and submit Progress Schedules in accordance with the General Conditions and this Section, unless otherwise accepted by ENGINEER.
2. Maintain and update Progress Schedules. Submit updated Progress Schedules as specified in this Section unless otherwise directed by ENGINEER.
3. ENGINEER's acceptance of the Progress Schedule, and comments or opinions concerning the activities in the Progress Schedule shall not control CONTRACTOR's independent judgment relative to means, methods, techniques, sequences, and procedures of construction. CONTRACTOR is solely responsible for complying with the Contract Times.

1.2 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Progress Schedules:
 - a. Submit 3 copies of preliminary Progress Schedule in accordance with Paragraph 2.05 of the General Conditions. Submit in accordance with Section 01 33 00, Submittal Procedures.
 - b. After making revisions in accordance with ENGINEER's comments on the preliminary Progress Schedule, submit 3 copies of Progress Schedule in accordance with Paragraph 2.07 of the General Conditions. Submit in accordance with Section 01 33 00, Submittal Procedures.
 - c. Submit each Progress Schedule submittal with letter of transmittal complying with requirements of Section 01 33 00, Submittal Procedures, and specifically indicating the following:
 - 1) Listing of activities and dates that have changed since the previous Progress Schedule submittal.
 - 2) Discussion of problems causing delays, anticipated duration of delays, and proposed countermeasures.
2. Recovery Schedules: Submit in accordance with this Section.

1.3 PROGRESS SCHEDULE FORMAT AND CONTENT

A. Format:

1. Type:
 - a. Horizontal bar chart or Gantt chart.

2. Sheet Size: 11 inches x 17 inches unless otherwise accepted by ENGINEER.
 3. Time Scale: Indicate first date of each work week.
 4. Organization:
 - a. Indicate on the separate Schedule of Submittals dates for submitting and reviewing Shop Drawings, Samples, and other submittals.
 - b. Group deliveries of materials and equipment into a separate sub-schedule that is part of the Progress Schedule.
 - c. Group construction into a separate sub-schedule (that is part of the Progress Schedule) by activity.
 - d. Group critical activities that dictate the rate of progress (the “critical path”) into a separate sub-schedule that is part of the Progress Schedule. Clearly indicate the critical path on the Progress Schedule.
 - e. Organize each sub-schedule by Specification Section number.
 5. Activity Designations: Indicate title and related Specification Section number.
- B. Content: Progress Schedules shall indicate the following:
1. Delivery dates for materials and equipment to be incorporated into the Work.
 2. Dates for beginning and completing each phase of the Work by activity and by trade.
 3. Dates for start-up and check-out, field-testing, and instruction of OWNER’s personnel.
 4. Dates corresponding to the Contract Times, and planned completion date associated with each Milestone (if any), Substantial Completion, and readiness for final payment.
- C. Coordinate the Progress Schedule with the Schedule of Submittals.

1.4 RECOVERY SCHEDULES

- A. Recovery Schedules, General:
1. When updated Progress Schedule indicates that the ability to comply with the Contract Times falls 5 or more days behind schedule, and there is no excusable delay, Change Order, or Work Change Directive to support an extension of the Contract Times, CONTRACTOR shall prepare and submit a Progress Schedule demonstrating CONTRACTOR’s plan to accelerate the Work to achieve compliance with the Contract Times (“recovery schedule”) for ENGINEER’s acceptance.
 2. Submit recovery schedule within 3 days after submittal of updated Progress Schedule where need for recovery schedule is indicated.
- B. Implementation of Recovery Schedule:
1. At no additional cost to OWNER, do one or more of the following: furnish additional labor, provide additional construction equipment, provide suitable materials, employ additional work shifts, expedite procurement of materials

and equipment to be incorporated into the Work, and other measures necessary to complete the Work within the Contract Times.

2. Upon acceptance of recovery schedule by ENGINEER, incorporate recovery schedule into the next Progress Schedule update.
- C. Lack of Action:
1. CONTRACTOR's refusal, failure, or neglect to take appropriate recovery action, or to submit a recovery schedule, shall constitute reasonable evidence that CONTRACTOR is not prosecuting the Work or separable part thereof with the diligence that will ensure completion within the Contract Times. Such lack of action shall constitute sufficient basis for OWNER to exercise remedies available to OWNER under the Contract Documents.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

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SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide submittals in accordance with the General Conditions as modified by the Supplementary Conditions, and this Section.
2. Provide submittals well in advance of need for the material or equipment, or procedure (as applicable), in the Work and with ample time required for delivery of material or equipment and to implement procedures following ENGINEER's approval or acceptance of the associated submittal. Work covered by a submittal will not be included in progress payments until approval or acceptance of related submittals has been obtained in accordance with the Contract Documents.
3. CONTRACTOR is responsible for dimensions to be confirmed and corrected at the Site, for information pertaining solely to the fabrication processes and to techniques of construction, and for coordinating the work of all trades. CONTRACTOR's signature of submittal's stamp and letter of transmittal shall be CONTRACTOR's representation that CONTRACTOR has met his obligations under the Contract Documents relative to that submittal.

B. Samples:

1. Conform submittal of Samples to the General Conditions as modified by the Supplementary Conditions, this Section, and the Specification Section in which the Sample is specified.
2. Furnish at the same time Samples and submittals that are related to the same unit of Work or Specification Section. ENGINEER will not review submittals without associated Samples, and will not review Samples without associated submittals.
3. Samples shall clearly illustrate functional characteristics of product, all related parts and attachments, and full range of color, texture, pattern, and material.

1.2 TYPES OF SUBMITTALS

- ###### A.
- Submittal types are classified as follows: 1) Action Submittals, 2) Informational Submittals, 3) Closeout Submittals, and 4) Maintenance Material submittals. Type of each required submittal is designated in the respective Specification Sections; when type of submittal is not specified in the associated Specification Section, submittal will be classified as follows:

1. Action Submittals include:
 - a. Shop Drawings.
 - b. Product data.
 - c. Delegated design submittals, which include documents prepared, sealed, and signed by a design professional retained by CONTRACTOR, Subcontractor, or Supplier for materials and equipment to be incorporated into the completed Work. Delegated design submittals do not include submittals related to temporary construction unless specified otherwise in the related Specification Section. Delegated design submittals include: design drawings, design data including calculations, specifications, certifications, and other submittals prepared by such design professional.
 - d. Samples.
 - e. Testing plans, procedures, and testing limitations.
2. Informational Submittals include:
 - a. Certificates.
 - b. Design data not sealed and signed by a design professional retained by CONTRACTOR, Subcontractor, or Supplier.
 - c. Pre-construction test and evaluation reports, such as reports on pilot testing, subsurface investigations, potential Hazardous Environmental Condition, and similar reports.
 - d. Supplier instructions, including installation data, and instructions for handling, starting-up, and troubleshooting.
 - e. Source quality control submittals (other than testing plans, procedures, and testing limitations), including results of shop testing.
 - f. Field or Site quality control submittals (other than testing plans, procedures, and testing limitations), including results of operating and acceptability tests at the Site.
 - g. Supplier reports.
 - h. Sustainable design submittals (other than sustainable design closeout documentation).
 - i. Special procedure submittals, including health and safety plans and other procedural submittals.
 - j. Qualifications statements.
3. Closeout Submittals include:
 - a. Maintenance contracts.
 - b. Operations and maintenance data.
 - c. Bonds, such as maintenance bonds and bonds for a specific product or system.
 - d. Warranty documentation.
 - e. Record documentation.
 - f. Sustainable design closeout documentation.
 - g. Software.

4. Maintenance Material Submittals include:
 - a. Spare parts.
 - b. Extra stock materials.
 - c. Tools.
 5. When type of submittal is not specified and is not included in the list above, ENGINEER will determine the type of submittal.
- B. Not Included in this Section: Administrative and procedural requirements for the following are covered elsewhere in the Contract Documents:
1. Requests for interpretations of the Contract Documents.
 2. Change Orders, Work Change Directives, and Field Orders.
 3. Applications for Payment
 4. Progress Schedules.
 5. Photographic documentation.
 6. Reports and documentation required in accordance with applicable permits.
 7. Site survey data.

1.3 SUBMITTALS REQUIRED IN THIS SECTION

- A. Informational Submittals: Provide the following:
1. Schedule of Submittals:
 - a. Timing:
 - 1) Provide submittal within time frames specified in the Contract Documents.
 - 2) Provide updated Schedule of Submittals with each submittal of the updated Progress Schedule.
 - b. Content: In accordance with the General Conditions as modified by the Supplementary Conditions, and this Section. Requirements for content of preliminary Schedule of Submittals and subsequent submittals of the Schedule of Submittals are identical. Identify on Schedule of Submittals all submittals required in the Contract Documents. Updates of Schedule of Submittals shall show scheduled dates and actual dates for completed tasks. Indicate submittals that are on the Project's critical path. Indicate the following for each submittal:
 - 1) Date by which submittal will be provided to ENGINEER.
 - 2) Whether submittal will be for a substitution or "equal". Procedures for substitutions and "or equals" are specified in the General Conditions and the Division 01 Specifications.
 - 3) Date by which ENGINEER's response is required. At least 14 days shall be allowed from ENGINEER's receipt of each submittal. Allow increased time for large or complex submittals.
 - 4) For submittals for materials or equipment, date by which material or equipment must be at the Site to avoid delaying the Work and to avoid delaying the work of other contractors.

- c. Prepare Schedule of Submittals using same software, and in same format, specified for Progress Schedules.
- d. Coordinate Schedule of Submittals with the Progress Schedule.
- e. Schedule of Submittals that is not compatible with the Progress Schedule, or that does not indicate submittals on the Project’s critical path, or that that places extraordinary demands on ENGINEER for time and resources, is unacceptable. Do not include submittals not required by the Contract Documents.
- f. In preparing Schedule of Submittals:
 - 1) Considering the nature and complexity of each submittal, allow sufficient time for review and revision.
 - 2) Reasonable time shall be allowed for: ENGINEER’s review and processing of submittals, for submittals to be revised and resubmitted, and for returning submittals to CONTRACTOR.
 - 3) Identify and accordingly schedule submittals that are expected to have long anticipated review times.

1.4 PROCEDURE FOR SUBMITTALS

- A. Submittal Identification System: Use the following submittal identification system, consisting of submittal number and review cycle number.
 - 1. Submittal Number: Shall be separate and unique number correlating to each individual submittal required. CONTRACTOR shall assign submittal number as follows:
 - a. First part of submittal number shall be the applicable Specification Section number, followed by a hyphen.
 - b. Second part of submittal number shall be a three-digit number (sequentially numbered from 001 through 999) assigned to each separate and unique submittal provided under the associated Specification Section.
 - c. Typical submittal number for the third submittal provided for Section 40 05 31, Thermoplastic Process Pipe, would be “40 05 31-003”.
 - 2. Review Cycle Number: Shall be a letter designation indicating the initial submittal or re-submittal associated with each submittal number:
 - a. “A” = Initial (first) submittal.
 - b. “B” = Second submittal (e.g., first re-submittal).
 - c. “C” = Third submittal (e.g., second re-submittal).
 - 3. Examples:

Example Description	Submittal Identification	
	Submittal No.	Review Cycle
Initial (first) review cycle of the third submittal provided under Section 40 05 31, Thermoplastic Process Pipe.	40 05 31-003-	A
Second review cycle (first re-submittal) of third submittal provided under Section 40 05 31, Thermoplastic Process Pipe.	40 05 31-003-	B

B. Letter of Transmittal for Submittals:

1. Provide separate letter of transmittal with each submittal. Each submittal shall be for one Specification Section.
2. At beginning of each letter of transmittal, provide a reference heading indicating: CONTRACTOR's name, OWNER's name, Project name, Contract name and number, transmittal number, and submittal number.
3. For submittals with proposed deviations from requirements of the Contract Documents, letter of transmittal shall specifically describe each proposed variation.

C. Contractor's Review and Stamp:

1. Contractor's Review: Before transmitting submittals to ENGINEER, review submittals to:
 - a. Assure proper coordination of the Work;
 - b. Determine that each submittal is in accordance with CONTRACTOR's desires;
 - c. Verify that submittal contains sufficient information for ENGINEER to determine compliance with the Contract Documents.
2. Incomplete or inadequate submittals will be returned without review.
3. Contractor's Stamp and Signature:
 - a. Each submittal provided shall bear CONTRACTOR's stamp of approval and signature, as evidence that submittal has been reviewed by CONTRACTOR and verified as complete and in accordance with the Contract Documents.
 - b. Submittals without CONTRACTOR's stamp and signature will be returned without review. Signatures that appear to be computer-generated will be regarded as unsigned and the associated submittal will be returned without review.
 - c. CONTRACTOR's stamp shall contain the following:

"Project Name": _____

Contractor's Name: _____

Date: _____

----- *Reference* -----

Item/Submittal Title: _____

Specifications:

Section: _____

Page No.: _____

Paragraph No.: _____

Drawing No.: _____ of _____

Location of Work: _____

Submittal No. and Review Cycle: _____

Coordinated by Contractor with Submittal Nos.: _____

I hereby certify that the Contractor has satisfied Contractor's obligations under the Contract Documents relative to Contractor's review and approval of this submittal.

Approved By (for Contractor): _____

D. Submittal Marking and Organization:

1. Mark on each page of submittal and each individual component submitted with submittal number and applicable Specification paragraph.
2. Arrange submittal information in same order as requirements are written in the associated Specification Section.
3. Each Shop Drawing sheet shall have title block with complete identifying information satisfactory to ENGINEER.
4. Package together submittals for the same Specification Section. Do not provide required information piecemeal.

E. Format of Submittal and Recipients:

1. Action Submittals and Informational Submittals: Furnish in accordance with Table 01 33 00-A, except that submittals of Samples shall be as specified elsewhere in this Section:

**TABLE 01 33 00-A: SUBMITTAL CONTACTS
AND REQUIRED COPIES**

	Address for Deliveries	Contact Person	E-mail Address	No. of Hard-copies*	Remarks
a.	Engineer: ARCADIS-US, Inc. 14025 Riveredge Drive Ste. 600 Tampa, FL 33637	Sean Chaparro	Sean.chaparro@arcadis- us.com	One	One Electronic Version
b.	Owner: City of Venice 3510 E. Laurel Road Nokomis, FL 34275	Tony Wierzbicki	TWierzbicki@venicegov.com	Three	One Electronic Version

**Hard copies are required for final approved submittals only. Interim submittals for review can be submitted electronically.*

2. Samples:

- a. Securely label or tag Samples with submittal identification number. Label or tag shall include clear space at least three inches by three inches in size for affixing ENGINEER's review stamp. Label or tag shall not

cover, conceal, or alter appearance or features of Sample. Label or tag shall not be separated from the Sample.

- b. Submit number of Samples required in Specifications. If number of Samples is not specified in the associated Specification Section, provide at least three identical Samples of each item required for ENGINEER's approval. Samples will not be returned to CONTRACTOR. If CONTRACTOR requires Sample(s) for CONTRACTOR's use, notify ENGINEER in writing and provide additional Sample(s). CONTRACTOR is responsible for furnishing, shipping, and transporting additional Samples.
 - c. Deliver one Sample to ENGINEER's field office at the Site. Deliver balance of Samples to ENGINEER at address listed in Table 01 33 00-A, unless otherwise directed by ENGINEER.
3. Closeout Submittals:
- a. Provide the following Closeout Submittals in accordance with Table 01 33 00-A: maintenance contracts; bonds for specific products or systems; warranty documentation; and sustainable design closeout documentation. On documents such as maintenance contracts and bonds, include on each document furnished original signature of entity issuing the document.
 - b. Operations and Maintenance Data: Submit in accordance with Section 01 78 23, Operations and Maintenance Data.
 - c. Record Documentation: Submit in accordance with Section 01 78 39, Project Record Documentation.
 - d. Software: Submit number of copies required in Specification Section where the software is specified. If number of copies is not specified, provide two copies on compact disc in addition to software loaded on to OWNER's computer(s) or microprocessor(s).
4. Maintenance Material Submittals: For spare parts, extra stock materials, and tools, submit quantity of items specified in associated Specification Section. Furnish in accordance with Section 01 78 43, Spare Parts and Extra Materials.

F. Distribution:

1. Distribution of Hardcopies: ENGINEER will distribute each reviewed submittal requiring ENGINEER's written response as follows:
 - a. CONTRACTOR: two copies (except closeout submittals and maintenance material submittals).
 - b. Resident Project Representative: One copy (except closeout submittals and maintenance material submittals).
 - c. ENGINEER's File: Two hard copies and one electronic version.

G. Resubmittals: Refer to the General Conditions for requirements regarding resubmitting required submittals.

- H. Submittal Log: Maintain an up-to-date log documenting required submittal description, submittal number, review cycle, status, dates, and other pertinent information.

1.5 ENGINEER'S REVIEW

- A. Timing: ENGINEER's review will conform to timing accepted by ENGINEER in the accepted Schedule of Submittals.
- B. Submittals not required in the Contract Documents will not be reviewed by ENGINEER and will not be recorded in ENGINEER's submittal log. All hardcopies of such submittals will be returned to CONTRACTOR.
- C. Action Submittals, Results of ENGINEER's Review: Each submittal will be given one of the following dispositions:
 - 1. Approved: Upon return of submittal marked "Approved", order, ship, or fabricate materials and equipment included in the submittal (pending ENGINEER's approval or acceptance, as applicable, of source quality control submittals) or otherwise proceed with the Work in accordance with the submittal and the Contract Documents.
 - 2. Approved as Corrected: Upon return of submittal marked "Approved as Corrected", order, ship, or fabricate materials and equipment included in the submittal (pending ENGINEER's approval or acceptance, as applicable, of source quality control submittals) or otherwise proceed with the Work in accordance with the submittal and the Contract Documents, provided it is in accordance with corrections indicated.
 - 3. Approved as Corrected – Resubmit: Upon return of submittal marked "Approved as Corrected – Resubmit", order, ship, or fabricate materials and equipment included in the submittal (pending ENGINEER's approval or acceptance, as applicable, of source quality control submittals) or otherwise proceed with the Work in accordance with the submittal and the Contract Documents, provided it is in accordance with corrections indicated. Provide to ENGINEER record re-submittal with all corrections made. Receipt of corrected re-submittal is required before materials or equipment covered in the submittal will be eligible for payment.
 - 4. Revise and Resubmit: Upon return of submittal marked "Revise and Resubmit", make the corrections indicated and re-submit to ENGINEER for approval.
 - 5. Not Approved: This disposition indicates material or equipment that cannot be approved. Upon return of submittal marked "Not Approved", repeat initial submittal procedure utilizing approvable material or equipment.
- D. Informational Submittals, Results of ENGINEER's Review:
 - 1. Each submittal will be given one of the following dispositions:

- a. Accepted: Information included in submittal conforms to the applicable requirements of the Contract Documents, and is acceptable. No further action by CONTRACTOR is required relative to this submittal, and the Work covered by the submittal may proceed, and products with submittals with this disposition may be shipped or operated, as applicable.
 - b. Not Accepted: Submittal does not conform to applicable requirements of the Contract Documents and is not acceptable. Revise submittal and re-submit to indicate acceptability and conformance with the Contract Documents.
- E. Closeout Submittals, Results of ENGINEER's Review: Dispositions and meanings are the same as specified for Informational Submittals. When acceptable, Closeout Submittals will not receive a written response from ENGINEER. Disposition as "accepted" will be recorded in ENGINEER's submittal log. When Closeout Submittal is not acceptable, ENGINEER will provide written response to CONTRACTOR.
- F. Maintenance Material Submittals, Results of ENGINEER's Review: Dispositions and meanings are the same as specified for Informational Submittals. When acceptable, Maintenance Material Submittals will not receive a written response from ENGINEER. Disposition as "accepted" will be recorded in ENGINEER's submittal log. When Maintenance Material Submittal is not acceptable, ENGINEER will provide written response to CONTRACTOR, and CONTRACTOR is responsible for costs associated with transporting and handling of maintenance materials until compliance with the Contract Documents is achieved.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

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SECTION 01 57 05

TEMPORARY CONTROLS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
1. CONTRACTOR shall provide and maintain methods, equipment, and temporary construction as required to control environmental conditions at the Site and adjacent areas.
 2. Maintain controls until no longer required.
 3. Temporary controls include, but are not limited to, the following:
 - a. Erosion and sediment controls.
 - b. Noise controls.
 - c. Dust control.
 - d. Pest and rodent control.
 - e. Control of water, including storm water runoff.
 - f. Pollution control.

1.2 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with applicable provisions and recommendations of jurisdictions having authority, including, but not limited to:
1. Florida Department of Environmental Protection.
 2. Florida Department of Health.
 3. City of Venice Building Department.

PART 2 – PRODUCTS

2.1 MATERIALS FOR TEMPORARY EROSION AND SEDIMENT CONTROLS

- A. Materials for temporary erosion and sediment controls shall be as shown or indicated on the Drawings.
- B. Filter Bag on Dewatering Pump Discharge:
1. Provide filter bag on discharge of each dewatering pump drawing from an excavation. Filter bag is not required on pumps associated with dewatering wells.
 2. Products and Manufacturers: Provide one of the following:
 - a. UltraTech Dewatering Bag, by Interstate Products.

- b. Filter Bag, by US Fabrics.
 - c. Dewatering (Filter) Bag, Indian Valley Industries.
 - d. DirtBag, by Atlantic Construction Fabrics (ACF) Environmental.
 - e. Or equal.
3. Size filter bags for maximum flow of the pump. Filter bags shall be specifically fabricated for use as a dewatering pump filter bag.
 4. Provide sufficient spare filter bags for continuous dewatering operations.

C. Temporary Stone Construction Entrance:

1. Stone: Tough, hard, durable stone complying with the following gradation requirements:

Sieve Size	Total Percent Passing
Four-inch (100 mm)	100
3.5-inch (90 mm)	90 to 100
2.5-inch (65 mm)	25 to 60
1.5-inch (37.5 mm)	Zero to 15

2. Geotextile: As recommended by geotextile manufacturer for separating stone from subgrade, for the vehicle weight and traffic frequency required.

PART 3 – EXECUTION

3.1 NOISE CONTROL

A. Noise Control – General:

1. CONTRACTOR’s vehicles and equipment shall minimize noise emissions to greatest degree practicable. Provide mufflers, silencers, and sound barriers when necessary.
2. Noise levels shall comply with Laws and Regulations, including OSHA requirements and local ordinances.
3. Noise emissions shall not interfere with the work of OWNER or others.

3.2 DUST CONTROL

A. Dust Control – General:

1. Control objectionable dust caused by CONTRACTOR's operation of vehicles and equipment, clearing, and other actions. To minimize airborne dust, apply water or use other methods subject to acceptance of ENGINEER and approval of authorities having jurisdiction.
2. CONTRACTOR shall prevent blowing and movement of dust from exposed soil surfaces and access roads to reduce on- and off-Site damage, nuisances, and health hazards associated with dust emissions. Control may be achieved by

irrigation in which the Site shall be sprinkled with water until the surface is moist. Apply dust controls as frequently as required without creating nuisances such as excessive mud and ponding of water at the Site.

3. Remove dust from roadways and access roads at maximum intervals of seven days by mechanical brooming or other method acceptable to ENGINEER.

3.3 PEST AND RODENT CONTROL

A. Pest and Rodent Control – General:

1. Provide rodent and pest control as required to prevent infestation of the Site and storage areas.
2. Employ methods and use materials that do not adversely affect conditions at the Site or on adjoining properties.
3. In accordance with Laws and Regulations, promptly and properly dispose of pests and rodents trapped or otherwise controlled.

3.4 WATER CONTROL

A. Water Control – General:

1. Provide methods to control surface water and water from excavations and structures to prevent damage to the Work, the Site, and adjoining properties.
2. Control fill, grading, and ditching to direct water away from excavations, pits, tunnels and other construction areas and to direct drainage to proper runoff courses to prevent erosion, damage, or nuisance.

B. Equipment and Facilities for Water Control: Provide, operate, and maintain equipment and facilities of adequate size to control surface water.

C. Discharge and Disposal: Dispose of drainage water in manner to prevent flooding, erosion, and other damage to any and all parts of the Site and adjoining areas, and that complies with Laws and Regulations.

3.5 POLLUTION CONTROL

A. Pollution Control – General:

1. Provide means, methods, and facilities required to prevent contamination of soil, water, and atmosphere caused by discharge of noxious substances from construction operations.
2. Equipment used during construction shall comply with Laws and Regulations.

B. Spills and Contamination:

1. Provide equipment and personnel to perform emergency measures required to contain spills and to remove contaminated soils and liquids.

2. Excavate contaminated material and properly dispose of off-Site, and replace with suitable compacted fill and topsoil.
- C. Protection of Surface Waters: Implement special measures to prevent harmful substances from entering surface waters. Prevent disposal of wastes, effluents, chemicals, and other such substances in or adjacent to surface waters and open drainage routes, in sanitary sewers, or in storm sewers.
- D. Atmospheric Pollutants:
1. Provide systems for controlling atmospheric pollutants related to the Work.
 2. Prevent toxic concentrations of chemicals and vapors.
 3. Prevent harmful dispersal of pollutants into atmosphere.
- E. Solid Waste:
1. Provide systems for controlling and managing solid waste related to the Work.
 2. Prevent solid waste from becoming airborne, and from discharging to surface waters and drainage routes.
 3. Properly handle and dispose of solid waste.

3.6 EROSION AND SEDIMENT CONTROL

- A. Protection of Storm Water Drainage Inlets and Catch Basins:
1. Protect each drainage inlet and catch basin that has the potential to receive storm water runoff from exposed soils, and does not discharge into a storm water settlement basin.
 2. Install either, inlet filter bags inside of drainage inlet or catch basin, or a silt fence barrier around drainage inlets and catch basins. Secure inlet filter bag with the structure's grate or by other acceptable means.
 3. Inlet filter bags shall not pose any obstruction above the elevation of the drainage inlet or catch basin grate requiring barricades or flashers.
 4. When removing silt and sediment from inlet filter bag, do not dump filter bag's contents into the drainage inlet or catch basin.
 5. Remove silt and sediment from inlet filter bag, or replace inlet filter bag, when inlet filter bag is not more than half full.
- C. Filter Bag on Dewatering Pump Discharge:
1. Provide dewatering of excavations in compliance with Division 31 Sections on earthmoving, excavation, and fill.
 2. Locate filter bags and temporary pump discharge lines to avoid interfering with the public, use of private property, and OWNER's operations. Relocate filter bags and appurtenances when required.
 3. Filter bag discharge shall be directed to appropriate storm water drainage route. Do not discharge into roadways, driveways, or access roads. When temporary

settlement basin is used, locate filter bags to discharge to temporary settlement basin when practicable.

4. Provide filter bag on discharge of each dewatering pump drawing from an excavation.
5. Securely attach filter bag to pump discharge pipe or hose.
6. Maintain, clean out, and replace filter bags as required.

D. Temporary Stone Construction Entrance:

1. Where shown on the Drawings, and where construction vehicles will regularly transit to paved surfaces from unstabilized surfaces, provide a temporary stone construction entrance. Contractor vehicles shall use temporary construction entrances.
2. Provide temporary stone construction entrances of the width, length, and thickness shown or indicated on the Drawings. When not shown or indicated on the Drawings, temporary stone construction entrance shall be not less than 50 feet long, by 20 feet wide, by eight inches deep.
3. Installation:
 - a. Ensure that subgrade under temporary stone construction entrance is suitably dense for the intended purpose. Suitably prepare subgrade as required for temporary construction entrance.
 - b. Provide on subgrade a layer of geotextile fabric, installed in accordance with geotextile manufacturer's recommendations for separation.
 - c. Provide stone on installed geotextile. Grade stone for passage of vehicles.
4. Maintenance:
 - a. Maintain temporary stone construction entrance at not less than the minimum required thickness. Add stone as required to maintain thickness.
 - b. When upper layer of temporary stone construction entrance becomes contaminated with soil, remove the contaminated material and replace with clean stone.
 - c. Using water to wash down temporary construction entrance or paved areas onto which soil material has been tracked is not allowed.

3.7 REMOVAL OF TEMPORARY CONTROLS

A. Removals – General:

1. Upon completion of the Work, remove temporary controls and restore Site to pre-construction condition.
2. After soils are permanently stabilized, remove from the Site temporary erosion and sediment controls.

+ + END OF SECTION + +

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SECTION 01 65 00

PRODUCT DELIVERY REQUIREMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope:
1. This Section includes the general requirements for preparing for shipping, delivering, and handling materials and equipment.
 2. CONTRACTOR shall make all arrangements for transporting, delivering, and handling of materials and equipment required for prosecution and completion of the Work.
 3. When required, move stored materials and equipment without additional compensation and without changes to the Contract Times.

1.2 SUBMITTALS

- A. Refer to individual Specification Sections for submittal requirements relative to delivering and handling materials and equipment.

1.3 PREPARING FOR SHIPMENT

- A. When practical, factory-assemble materials and equipment. Match mark or tag separate parts and assemblies to facilitate field assembly. Cover machined and unpainted parts that may be damaged by the elements with strippable, protective coating.
- B. Package materials and equipment to facilitate handling, and protect materials and equipment from damage during shipping, handling, and storage. Mark or tag outside of each package or crate to indicate the associated purchase order number, bill of lading number, contents by name, OWNER's contract name and number, CONTRACTOR name, equipment number, and approximate weight. Include complete packing lists and bills of materials with each shipment.
- C. Protect materials and equipment from exposure to the elements and keep thoroughly dry and dust-free at all times. Protect painted surfaces against impact, abrasion, discoloration, and other damage. Lubricate bearings and other items requiring lubrication in accordance with manufacturer's instructions.

- D. Advance Notice of Shipments:
1. Keep ENGINEER informed of delivery of all materials and equipment to be incorporated in the Work.
 2. Upon receipt of Supplier's advance notice of shipment, at least seven days prior to delivery of materials and equipment, provide ENGINEER written notification of anticipated date and place of arrival.
- E. Do not ship materials and equipment until:
1. Related Shop Drawings and other submittals have been approved or accepted (as applicable) by ENGINEER, including, but not necessarily limited to, all Action Submittals associated with the materials and equipment being delivered.
 2. Manufacturer's instructions for handling, storing, and installing the associated materials and equipment have been submitted to and accepted by ENGINEER in accordance with the Specifications.
 3. Results of source quality control testing (factory testing), when required by the Contract Documents for the associated materials or equipment, have been reviewed and accepted by ENGINEER.
 4. Facilities required for handling materials and equipment in accordance with manufacturer's instructions are in place and available.
 5. Required storage facilities have been provided.

1.4 DELIVERY

- A. Scheduling and Timing of Deliveries:
1. Arrange deliveries of materials and equipment in accordance with the accepted Progress Schedule and in ample time to facilitate inspection prior to installation.
 2. Schedule deliveries to minimize space required for and duration of storage of materials and equipment at the Site or delivery location, as applicable.
 3. Coordinate deliveries to avoid conflicting with the Work and conditions at Site, and to accommodate the following:
 - a. Work of other contractors and OWNER.
 - b. Storage space limitations.
 - c. Availability of equipment and personnel for handling materials and equipment.
 - d. OWNER's use of premises.
 4. Deliver materials and equipment to the Site during regular working hours.
 5. Deliver materials and equipment to avoid delaying the Work and the Project, including work of other contractors, as applicable. Deliver anchor system materials, including anchor bolts to be embedded in concrete or masonry, in ample time to avoid delaying the Work.

B. Deliveries:

1. Shipments shall be delivered with CONTRACTOR's name, Subcontractor's name (if applicable), Site name, Project name, and contract designation (example: "ABC Construction Co., City of Somewhere, Idaho, Wastewater Treatment Plant Primary Clarifier Improvements, Contract 25, General Construction") clearly marked.
2. Site may be listed as the "ship to" or "delivery" address; but OWNER shall not be listed as recipient of shipment unless otherwise directed in writing by ENGINEER.
3. Provide CONTRACTOR's telephone number to shipper; do not provide OWNER's telephone number.
4. Arrange for deliveries while CONTRACTOR's personnel are at the Site. CONTRACTOR shall receive and coordinate shipments upon delivery. Shipments delivered to the Site when CONTRACTOR is not present will be refused by OWNER, and CONTRACTOR shall be responsible for the associated delays and additional costs, if incurred.

C. Containers and Marking:

1. Have materials and equipment delivered in manufacturer's original, unopened, labeled containers.
2. Clearly mark partial deliveries of component parts of materials and equipment to identify materials and equipment, to allow easy accumulation of parts, and to facilitate assembly.

D. Inspection of Deliveries:

1. Immediately upon delivery, inspect shipment to verify that:
 - a. Materials and equipment comply with the Contract Documents and approved or accepted (as applicable) submittals.
 - b. Quantities are correct.
 - c. Materials and equipment are undamaged.
 - d. Containers and packages are intact and labels are legible.
 - e. Materials and equipment are properly protected.
2. Promptly remove damaged materials and equipment from the Site and expedite delivery of new, undamaged materials and equipment, and remedy incomplete or lost materials and equipment to furnish materials and equipment in accordance with the Contract Documents, to avoid delaying progress of the Work.
3. Advise ENGINEER in writing when damaged, incomplete, or defective materials and equipment are delivered, and advise ENGINEER of the associated impact on the Progress Schedule.

1.5 HANDLING OF MATERIALS AND EQUIPMENT

- A. Provide equipment and personnel necessary to handle materials and equipment, including those furnished by OWNER, by methods that prevent soiling or damaging materials and equipment and packaging.
- B. Provide additional protection during handling as necessary to prevent scraping, marring, and otherwise damaging materials and equipment and surrounding surfaces.
- C. Handle materials and equipment by methods that prevent bending and overstressing.
- D. Lift heavy components only at designated lifting points.
- E. Handle materials and equipment in safe manner and as recommended by the manufacturer to prevent damage. Do not drop, roll, or skid materials and equipment off delivery vehicles or at other times during handling. Hand-carry or use suitable handling equipment.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

SECTION 01 66 00

PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This Section includes general requirements for storing and protecting materials and equipment.

1.2 STORAGE

- A. Store and protect materials and equipment in accordance with manufacturer's recommendations and the Contract Documents.
- B. CONTRACTOR shall make all arrangements and provisions necessary for, and pay all costs for, storing materials and equipment. Excavated materials, construction equipment, and materials and equipment to be incorporated into the Work shall be placed to avoid injuring the Work and existing facilities and property, and so that free access is maintained at all times to all parts of the Work and to public utility installations in vicinity of the Work. Store materials and equipment neatly and compactly in locations that cause minimum inconvenience to OWNER, other contractors, public travel, and owners, tenants, and occupants of adjoining property. Arrange storage in manner to allow easy access for inspection.
- C. Store materials and equipment to become OWNER's property to facilitate their inspection and ensure preservation of quality and fitness of the Work, including proper protection against damage by freezing, moisture, and high temperatures with ambient temperatures as high as 100 degrees F. Store in indoor, climate-controlled storage areas all materials and equipment subject to damage by moisture, humidity, heat, cold, and other elements, unless otherwise acceptable to OWNER. When placing orders to Suppliers for equipment and controls containing computer chips, electronics, and solid-state devices, CONTRACTOR shall obtain, coordinate, and comply with specific temperature and humidity limitations on materials and equipment, because temperature inside cabinets and components stored in warm temperatures can approach 200 degrees F.
- D. CONTRACTOR shall be fully responsible for loss or damage (including theft) to stored materials and equipment.
- E. Do not open manufacturer's containers until time of installation, unless recommended by the manufacturer or otherwise specified in the Contract Documents.

- F. Do not store materials or equipment in structures being constructed unless approved by ENGINEER in writing.
- G. Do not use lawns or other private property for storage without written permission of the owner or other person in possession or control of such premises.

1.3 PROTECTION

- A. Equipment to be incorporated into the Work shall be boxed, crated, or otherwise completely enclosed and protected during shipping, handling, and storage, in accordance with Section 01 65 00, Product Delivery Requirements.
- B. Store all materials and equipment off the ground (or floor) on raised supports such as skids or pallets.
- C. Protect painted surfaces against impact, abrasion, discoloration, and other damage. Painted equipment surfaces that are damaged or marred shall be repainted in their entirety in accordance with equipment manufacturer and paint manufacturer requirements, to the satisfaction of ENGINEER.
- D. Protect electrical equipment, controls, and instrumentation against moisture, water damage, heat, cold, and dust. Space heaters provided in equipment shall be connected and operating at all times until equipment is placed in operation and permanently connected.

1.4 UNCOVERED STORAGE

- A. The following types of materials may be stored outdoors without cover on supports so there is no contact with the ground:
 - 1. Reinforcing steel.
 - 2. Precast concrete materials.
 - 3. Structural steel.
 - 4. Rigid electrical conduit.
 - 5. Piping, except polyvinyl chloride (PVC) pipe.
 - 6. Canopy materials.

1.5 COVERED STORAGE

- A. The following materials and equipment may be stored outdoors on supports and completely covered with covering impervious to water:
 - 1. Grout and mortar materials.
 - 2. Masonry units.
 - 3. Soil materials and granular materials such as aggregate.

4. Ductile iron pipe.
- B. Tie down covers with rope, and slope covering to prevent accumulation of water.

1.6 FULLY PROTECTED STORAGE

- A. Store all material and equipment not named in Articles 1.4 and 1.5 of this Section on supports in buildings or trailers that have concrete or wooden flooring, roof, and fully closed walls on all sides. Covering with visquine plastic sheeting or similar material in space without floor, roof, and walls is not acceptable. Comply with the following:
1. Provide heated storage for materials and equipment that could be damaged by low temperatures or freezing.
 2. Provide air-conditioned storage for materials and equipment that could be damaged by high temperatures.
 3. Protect mechanical and electrical equipment from being contaminated by dust, dirt, and moisture.
 4. Maintain humidity at levels recommended by manufacturers for electrical and electronic equipment.

1.7 HAZARDOUS PRODUCTS

- A. Prevent contamination of personnel, storage area, and the Site. Comply with all applicable Laws and Regulations and manufacturer's instructions.

1.8 MAINTENANCE OF STORAGE

- A. On scheduled basis, periodically inspect stored materials and equipment to ensure that:
1. Condition and status of storage facilities is adequate to provide required storage conditions.
 2. Required environmental conditions are maintained on continuing basis.
 3. Materials and equipment exposed to elements are not adversely affected.
- B. Mechanical and electrical equipment requiring long-term storage shall have complete manufacturer's instructions for servicing each item, with notice of enclosed instructions shown on exterior of container or package.
1. Comply with manufacturer's instructions on scheduled basis.
 2. Space heaters that are part of electrical equipment shall be connected and operated continuously until equipment is placed in service and permanently connected.

1.9 MICROPROCESSORS, PANELS, AND INSTRUMENTATION STORAGE

- A. Store panels, microprocessor-based equipment, electronics, and other devices subject

to damage or decreased useful life because of temperatures below 40 degrees F or above 100 degrees F, relative humidity above 90 percent, or exposure to rain or exposure to blowing dust in climate-controlled storage space.

B. Requirements:

1. Storage locations at the Site shall be coordinated with OWNER. Off-site storage of materials is permitted in climate-controlled storage space.
2. OWNER and ENGINEER have the right to inspect materials and equipment during normal working hours.
3. Placed inside each panel or device a desiccant, volatile corrosion inhibitor blocks (VCI), moisture indicator, and maximum-minimum indicating thermometer.
4. Check panels and equipment at least once per month. Replace desiccant, VCI, and moisture indicator as often as required, or every six months, whichever occurs first.

C. Costs for storing climate-sensitive materials and equipment shall be paid by CONTRACTOR. Replace panels and devices damaged during storage, or for which storage temperatures or humidity range has been exceeded, at no additional cost to OWNER. Delays resulting from such replacement are causes within CONTRACTOR's control.

D. Do not ship panels and equipment to the Site until conditions at the Site are suitable for installation, including slabs and floors, walls, roofs, and environmental controls. Failure to have the Site ready for installation shall not relieve CONTRACTOR from complying with the Contract Documents.

1.10 RECORDS

A. Keep up-to-date account of materials and equipment in storage to facilitate preparation of Applications for Payment, if the Contract Documents provide for payment for materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION +

SECTION 01 75 11

CHECKOUT AND STARTUP PROCEDURES

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall initially start up and place equipment installed under the Contract into successful operation, in accordance with the equipment manufacturer's written instructions and as instructed by Supplier at the Site.
2. Provide all material, labor, tools, and equipment required to complete equipment checkout and start-up.
3. Provide chemicals, lubricants, and other required operating fluids.
4. Provide fuel, electricity, water, filters, and other expendables required for start-up of equipment, unless otherwise specified.
5. General Activities Include:
 - a. Cleaning, as required under other provisions of the Contract Documents.
 - b. Removing temporary protective coatings.
 - c. Flushing and replacing lubricants, where required by manufacturer.
 - d. Lubrication.
 - e. Checking shaft and coupling alignments and resetting where required.
 - f. Checking and setting motor, pump, and other equipment rotation, safety interlocks, and belt tensions.
 - g. Checking and correcting (if necessary) leveling plates, grout, bearing plates, anchorage devices, fasteners, and alignment of piping, conduits, and ducts that may place stress on the connected equipment.
 - h. All adjustments required.

B. Coordination:

1. Coordinate checkout and start-up with other contractors, as necessary.
2. Do not start up system or subsystem for continuous operation until all components of that system or subsystem, including instrumentation and controls, have been tested to the extent practicable and proven to be operable as intended by the Contract Documents.
3. OWNER will provide sufficient personnel to assist CONTRACTOR in starting up equipment, but responsibility for proper operation is CONTRACTOR's.
4. Supplier shall be present during checkout, start-up, and initial operation, unless otherwise acceptable to ENGINEER.
5. Start-up of heating and air conditioning equipment and systems is dependent upon the time of year. Return to the Site at beginning of next heating or air

conditioning season (as applicable) to recheck and start the appropriate systems.

6. Do not start up system, unit process, or equipment without submitting acceptable preliminary operations and maintenance manuals by CONTRACTOR, in accordance with Section 01 78 23, Operations and Maintenance Data.

C. OWNER's Assumption of Responsibility for Equipment and Systems:

1. OWNER will assume responsibility for the equipment upon Substantial Completion.
2. Prior to turning over to OWNER responsibility for operating and maintaining system or equipment:
 - a. Provide training of operations and maintenance personnel in accordance with Section 01 79 23, Instruction of Operations and Maintenance Personnel.
 - b. Complete system field quality control testing in accordance with the Contract Documents.
 - c. Submit acceptable final operations and maintenance manuals in accordance with Section 01 78 23, Operations and Maintenance Data.
 - d. Obtain from ENGINEER final certificate of Substantial Completion for either entire Work or the portion being turned over to OWNER.

1.2 SUBMITTALS

A. Closeout Submittals: Submit the following:

1. Certifications:
 - a. Supplier's certification of installation in accordance with Paragraph 3.1.B of this Section.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 SERVICES OF SUPPLIER

- A. When specified, furnish services of competent, qualified representatives of material and equipment manufacturers as specified, including supervising installation, adjusting, checkout, start-up, and testing of materials and equipment.
- B. Certification:
 1. When services by Supplier are required at the Site, within 14 days after first test operation of equipment, submit to ENGINEER a letter from Supplier, on Supplier's letterhead, stating that materials and equipment are installed in

accordance with Supplier's requirements and installation instructions, and in accordance with the Contract Documents.

2. In lieu of Supplier letter, submit completed form attached to this Section.
3. Include in the final operations and maintenance manual for the associated equipment a copy of the letter or completed form, as applicable.

3.2 MINIMUM START-UP REQUIREMENTS

A. Bearings and Shafting:

1. Inspect for cleanliness, and clean and remove foreign matter.
2. Verify alignment.
3. Replace defective bearings and those that operate in a rough or noisy manner.
4. Grease as necessary, in accordance with manufacturer's recommendations.

B. Drives:

1. Adjust tension in V-belt drives and adjust vari-pitch sheaves and drives for proper equipment speed.
2. Adjust drives for alignment of sheaves and V-belts.
3. Clean and remove foreign matter before starting operation.

C. Motors:

1. Check each motor for comparison to amperage nameplate value.
2. Correct conditions that produce excessive current flow and conditions that exist due to equipment malfunction.

D. Pumps:

1. Check glands and seals for cleanliness and adjustment before running pump.
2. Inspect shaft sleeves for scoring.
3. Inspect mechanical faces, chambers, and seal rings, and replace if defective.
4. Verify that piping system is free of dirt and scale before circulating liquid through pump.

E. Valves:

1. Inspect manual and automatic control valves, and clean bonnets and stems.
2. Tighten packing glands to ensure no leakage, but allow valve stems to operate without galling.
3. Replace packing in valves to retain maximum adjustment after system is determined to be complete.
4. Replace packing on valves that continue to leak.
5. Remove and repair bonnets that leak.
6. After cleaning, coat packing gland threads and valve stems with surface preparation of "Molycote" or "Fel-Pro".

- F. Verify that control valve seats are free of foreign matter and are properly positioned for intended service.
- G. Tighten flanges and other pipe joints after system has been placed in operation. Replace gaskets that show signs of leakage after tightening.
- H. Inspect all joints for leakage:
 - 1. Promptly remake each joint that appears to be faulty; do not wait for rust or other corrosion to form.
 - 2. Clean threads on both parts, and apply compound and remake joints.
- I. After system has been placed in operation, clean strainers, drives, pockets, orifices, valve seats, and headers in fluid system to ensure freedom from foreign matter.
- J. Open air vents, where used, and remove operating elements. Clean thoroughly, replace internal parts, and place back into operation.
- K. Remove rust, scale, and foreign matter from equipment and renew defaced surfaces.
- L. Set and calibrate equipment as required.
- M. Inspect fan wheels for clearance and balance. Provide factory-authorized personnel for adjustment when needed.
- N. Check each electrical control circuit to verify that operation complies with the Contract Documents.
- O. Inspect each pressure gauge, thermometer, and other instruments for calibration. Replace items that are defaced, broken, or that read incorrectly.
- P. Repair damaged insulation.
- Q. Excess Gasses and Fluids:
 - 1. Vent gasses trapped in systems.
 - 2. Verify that liquids are drained from all parts of air systems.

3.3 ATTACHMENTS

- A. The attachment listed below, following the “End of Section” designation, is a part of this Specification Section.
 - 1. Supplier’s Installation Certification Form (one page).

+ + END OF SECTION + +

SUPPLIER'S INSTALLATION CERTIFICATION

Contract No. and Name: _____

Equipment Specification Section: _____

Equipment Name: _____

Contractor: _____

Manufacturer of Equipment: _____

The undersigned Supplier of the equipment described above hereby certifies that Supplier has checked the equipment installation and that the equipment, as specified in the Contract Documents, has been provided in accordance with the manufacturer's recommendations and the Contract Documents, and that the trial operation of the equipment has been satisfactory.

Comments: _____

Date

Supplier Name (print)

Signature of Supplier

Date

Contractor Name (print)

Signature of Contractor

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SECTION 01 77 19

CLOSEOUT REQUIREMENTS

PART 1 – GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

- A. Definitions: Closeout is defined to include the general requirements near the end of the Contract Time, in preparation for final acceptance, final payment, normal termination of the Contract, occupancy by the OWNER and similar actions evidencing completion of the WORK.

1.2 PREREQUISITES FOR FINAL ACCEPTANCE

- A. General: Prior to requesting the OWNER's final inspection for certifications of final acceptance and final payment, as required by the General Conditions, complete the following and list known exceptions (if any) in request:
1. Submit final payment request with final releases and supports not previously submitted and accepted. Include certificates of insurance for products and completed operations.
 2. Submit updated final statement, accounting for additional changes to the Contract Sum.
 3. Submit certified copy of the OWNER's final punch-list of itemized WORK to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by the OWNER.

1.3 CLOSEOUT PROCEDURES

- A. General Operating/Maintenance Instructions: Arrange for each installer of WORK requiring continuing maintenance (by the OWNER) or operation, to meet with the OWNER's personnel, at the project site, to provide basic instructions needed for proper operation and maintenance of the entire WORK. Include instructions by manufacturer's representatives where installers are not expert in the required procedures. Review maintenance manuals, record documentation, tools, spare parts and materials, identification system, hazards, cleaning and similar procedures and facilities. For operational equipment, demonstrates start-up, shut-down, emergency operations, noise and vibration adjustments, safety, economy/efficiency adjustments, and similar operations. Review maintenance and operations in relation with applicable guarantees, warranties, agreements to maintain, bonds and similar continuing commitments.

1.4 FINAL CLEANING

- A. General: As specified herein, provide final cleaning of the WORK. The following are examples, but not by way of limitation, of the cleaning levels required.
 - 1. Clean project site (yard and grounds), including landscaping, development areas, of litter and foreign substances. Sweep paved areas to a broom-clean condition; remove stains, petrochemical spills and other foreign deposits. Rake grounds, which are neither planted nor paved, to a smooth evenly textured surface.
 - 2. Restore the grass and landscaping to original condition. Repair ruts caused by equipment.
 - 3. Remove discharge piping and restore discharge pipeline trends to original condition. Sod where needed. Mow grass where needed.
 - 4. Remove discharge piping and restore outfall area to original condition.

1.5 REMOVAL OF PROTECTION

- A. Except as otherwise indicated or requested by the OWNER, remove temporary protection devices and facilities which were installed during the course of the WORK to protect previously completed WORK during the remainder of the construction period.

1.6 COMPLIANCY

- A. Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at the site, or bury debris or excess materials on the OWNER's property, or discharge volatile or other harmful or dangerous materials into drainage systems; remove waste materials from the site and dispose of in a lawful manner.
- B. Where extra materials of value remaining after completion of the associated WORK have become the OWNER's property, dispose or store at the site as directed by the OWNER.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

+ + END OF SECTION + +

SECTION 01 78 23

OPERATIONS AND MAINTENANCE DATA

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. Submit operation and maintenance data, in accordance with this Section and in accordance with requirements elsewhere in the Contract Documents, as instructional and reference manuals by operations and maintenance personnel at the Site.
2. Required operation and maintenance data are presented in the individual Specification Sections. At minimum, submit operation and maintenance data for:
 - a. All equipment and systems.
 - b. Valves, gates, actuators, and related accessories.
 - c. Instrumentation and control devices.
 - d. Electrical gear.
3. For each operation and maintenance manual, submit the following:
 - a. Preliminary Submittal: Electronic copy of entire operation and maintenance manual, except for test data, service reports by Supplier, and electronic copies.
 - b. Final Submittal: Printed and bound copy of complete operations and maintenance manual, including test data and service reports by Supplier, with electronic copies.

B. Quantity Required and Timing of Submittals:

1. Preliminary Submittal:
 - a. Electronic Copies: Two copies, exclusive of any printed copies required by CONTRACTOR.
 - b. Submit to ENGINEER by the earlier of: ninety days following approval of Shop Drawings and product data submittals, or ten days prior to starting training of operations and maintenance personnel, or ten days prior to field quality control testing at the Site.
2. Final Submittal: Provide final submittal prior to Substantial Completion, unless submittal is specified as required prior to an interim Milestone.
 - a. Printed Copies: Three copies.
 - b. Electronic Copies: Three copies.

1.2 FORMAT OF PRINTED COPIES

A. Binding and Cover:

1. Bind each operation and maintenance manual in durable, permanent, stiff-cover binder(s), comprising one or more volumes per copy as required. Binders shall be minimum one-inch wide and maximum of three-inch wide. Binders for each copy of each volume shall be identical.
2. Binders shall be locking three-ring/"D"-ring type, or three-post type. Three-ring binders shall be riveted to back cover and include plastic sheet lifter (page guard) at front of each volume.
3. Do not overfill binders.
4. Covers shall be oil-, moisture-, and wear-resistant, including identifying information on cover and spine of each volume.
5. Provide the following information on cover of each volume:
 - a. Title: "OPERATING AND MAINTENANCE INSTRUCTIONS".
 - b. Name or type of material or equipment covered in the manual.
 - c. Volume number, if more than one volume is required, listed as "Volume ___ of ___", with appropriate volume-designating numbers filled in.
 - d. Name of Project and, if applicable, Contract name and number.
 - e. Name of building or structure, as applicable.
6. Provide the following information on spine of each volume:
 - a. Title: "OPERATING AND MAINTENANCE INSTRUCTIONS".
 - b. Name or type of material or equipment covered in the manual.
 - c. Volume number, if more than one volume is required, listed as "Volume ___ of ___", with appropriate volume-designating numbers filled in.
 - d. Project name and building or structure name.

B. Pages:

1. Print pages in manual on 30-pound (minimum) paper, 8.5 inches by 11 inches in size.
2. Reinforce binding holes in each individual sheet with plastic, cloth, or metal. When published, separately-bound booklets or pamphlets are part of the manual, reinforcing of pages within booklet or pamphlet is not required.
3. Provide each page with binding margin at least one inch wide. Punch each page with holes suitable for the associated binding.

C. Drawings:

1. Bind into the manual drawings, diagrams, and illustrations up to and including 11 inches by 17 inches in size, with reinforcing specified for pages.
2. Documents larger than 11 inches by 17 inches shall be folded and inserted into clear plastic pockets bound into the manual. Mark pockets with printed text indicating content and drawing numbers. Include no more than three drawing sheets per pocket.

- D. Copy Quality and Document Clarity:
1. Contents shall be original-quality copies. Documents in the manual shall be either original manufacturer-printed documents or first-generation photocopies indistinguishable from originals. If original is in color, copies shall be in color. Manuals that contain copies that are unclear, not completely legible, off-center, skewed, or where text or drawings are cut by binding holes, are unacceptable. Pages that contain approval or date stamps, comments, or other markings that cover text or drawing are unacceptable. Faxed copies are unacceptable.
 2. Clearly mark in ink to indicate all components of materials and equipment on catalog pages for ease of identification. In standard or pre-printed documents, indicate options furnished or cross out inapplicable content. Using highlighters to so indicate options furnished is unacceptable.
- E. Organization:
1. Coordinate with ENGINEER and OWNER to develop comprehensive, practical, and consistent indexing system for operations and maintenance data. ENGINEER will review indexing system before operations and maintenance data is submitted.
 2. Table of Contents:
 - a. Provide table of contents in each volume of each operations and maintenance manual.
 - b. In table of contents and at least once in each chapter or section, identify materials and equipment by their functional names. Thereafter, abbreviations and acronyms may be used if their meaning is clearly indicated in a table bound at or near beginning of each volume. Using material or equipment model or catalog designations for identification is unacceptable.
 3. Use dividers and indexed tabs between major categories of information, such as operating instructions, preventive maintenance instructions, and other major subdivisions of data in each manual.

1.3 FORMAT OF ELECTRONIC COPIES

- A. Electronic Copies of Operation and Maintenance Manuals:
1. Each electronic copy shall include all information included in the corresponding printed copy.
 2. Submit each electronic copy on a separate compact disc (CD), unless another electronic data transfer method or format is acceptable to ENGINEER.
 3. File Format:
 - a. Files shall be in “portable document format” (PDF). Files shall be electronically searchable.
 - b. Submit separate file for each separate document in the printed copy.

- c. Within each file, provide bookmarks for the following:
 - 1) Each chapter and subsection listed in the corresponding printed copy document's table of contents.
 - 2) Each figure.
 - 3) Each table.
 - 4) Each appendix.
- 4. At the request of the OWNER, also submit drawings and figures in one of the following formats: “.bmp”, “.tif”, “.jpg”, or “.gif”. Submit files in a separate directory on the CD.

1.4 CONTENT

A. General:

- 1. Prepare each operations and maintenance manual specifically for the Project. Include in each manual all pertinent instructions, as-built drawings as applicable, bills of materials, technical bulletins, installation and handling requirements, maintenance and repair instructions, and other information required for complete, accurate, and comprehensive data for safe and proper operation, maintenance, and repair of materials and equipment furnished for the Project. Include in manuals specific information required in the Specification Section for the material or equipment, data required by Laws and Regulations, and data required by authorities having jurisdiction.
 - 2. Completeness and Accuracy:
 - a. Operation and maintenance manuals that include language stating or implying that the manual's content may be insufficient or stating that the manual's content is not guaranteed to be complete and accurate are unacceptable.
 - b. Operations and maintenance manuals shall be complete and accurate.
 - c. Operation and maintenance manuals shall indicate the specific alternatives and features furnished, and the specific operation and maintenance provisions for the material or equipment furnished.
 - 3. Submit complete, detailed written operating instructions for each material or equipment item including: function; operating characteristics; limiting conditions; operating instructions for start-up, normal and emergency conditions; regulation and control; operational troubleshooting; and shutdown. Also include, as applicable, written descriptions of alarms generated by equipment and proper responses to such alarm conditions.
- B. Submit written explanations of all safety considerations relating to operation and maintenance procedures.
- C. Submit complete, detailed, written preventive maintenance instructions including all information and instructions to keep materials, equipment, and systems properly lubricated, adjusted, and maintained so that materials, equipment, and systems

function economically throughout their expected service life. Instructions shall include:

1. Written explanations with illustrations for each preventive maintenance task such as inspection, adjustment, lubrication, calibration, and cleaning. Include pre-startup checklists for each equipment item and maintenance requirements for long-term shutdowns.
 2. Recommended schedule for each preventive maintenance task.
 3. Troubleshooting instructions.
 4. List of required maintenance tools and equipment.
- D. Submit complete bills of material or parts lists for materials and equipment furnished. Lists or bills of material may be furnished on a per-drawing or per-equipment assembly basis. Bills of material shall indicate:
1. Manufacturer's name, address, telephone number, fax number, and Internet website address.
 2. Manufacturer's local service representative's or local parts supplier's name, address, telephone number, fax number, Internet website address, and e-mail addresses, when applicable.
 3. Manufacturer's shop order and serial number(s) for materials, equipment or assembly furnished.
 4. For each part or piece include the following information:
 - a. Parts cross-reference number. Cross-reference number shall be used to identify the part on assembly drawings, Shop Drawings, or other type of graphic illustration where the part is clearly shown or indicated.
 - b. Part name or description.
 - c. Manufacturer's part number.
 - d. Quantity of each part used in each assembly.
 - e. Current unit price of the part at the time the operations and maintenance manual is submitted. Price list shall be dated.
- E. Submit complete instructions for ordering replaceable parts, including reference numbers (such as shop order number or serial number) that will expedite the ordering process.
- F. Submit manufacturer's recommended inventory levels for spare parts, extra stock materials, and consumable supplies for the initial two years of operation. Consumable supplies are items consumed or worn by operation of materials or equipment, and items used in maintaining the operation of material or equipment, including items such as lubricants, seals, reagents, and testing chemicals used for calibrating or operating the equipment. Include estimated delivery times, shelf life limitations, and special storage requirements.

- G. Submit manufacturer's installation and operation bulletins, diagrams, schematics, and equipment cutaways. Avoid submitting catalog excerpts unless they are the only document available showing identification or description of particular component of the equipment. Where materials pertain to multiple models or types, mark the literature to indicate specific material or equipment supplied. Marking may be in the form of checking, arrows, or underlining to indicate pertinent information, or by crossing out or other means of obliterating information that does not apply to the materials and equipment furnished.
- H. Submit original-quality copies of each approved and accepted Shop Drawing, product data, and other submittal, updated to indicate as-installed condition. Reduced drawings are acceptable only if reduction is to not less than one-half original size and all lines, dimensions, lettering, and text are completely legible on the reduction.
- I. Submit complete electrical schematics and wiring diagrams, including complete point-to-point wiring and wiring numbers or colors between all terminal points.
- J. Submit copy of warranty bond and service contract as applicable.
- K. When copyrighted material is used in operations and maintenance manuals, obtain copyright holder's written permission to use such material in the operation and maintenance manual.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. CONTRACTOR shall maintain and submit to ENGINEER with record documents as specified below, except where otherwise specified or modified in Divisions 3 through 43.
- B. Maintenance of Record Documents:
1. Maintain in clean, dry, legible condition, complete sets of the following record documents: Drawings, Specifications, and Addenda; Shop Drawings, and other CONTRACTOR submittals, including records of test results, approved or accepted as applicable, by ENGINEER; Change Orders, Work Change Directives, Field Orders, photographic documentation, survey data, and all other documents pertinent to the Work.
 2. Make record documents available for inspection upon request of ENGINEER or OWNER.
 3. Do not use record documents for purpose other than serving as Project record. Do not remove record documents from CONTRACTOR's field office without ENGINEER's approval.
- C. Submittal of Record Documents:
1. Submit to ENGINEER the following record documents:
 - a. Drawings.
 - b. Project Manual including Specifications and Addenda (bound).
 2. Prior to readiness for final payment, submit to ENGINEER one copy of final record documents. Submit complete record documents; do not make partial submittals.
 3. Submit record documents with transmittal letter on CONTRACTOR letterhead complying with letter of transmittal requirements in Section 01 33 00, Submittal Procedures.
 4. Record documents submittal shall include certification, with original signature of official authorized to execute legal agreements on behalf of CONTRACTOR, reading as follows:

“*[Insert Contractor's corporate name]* has maintained and submitted record documentation in accordance with the General Conditions and Supplementary Conditions, Section 01 78 39, Project Record Documents, and other elements of Contract Documents, for the City of Venice RO Water Treatment Plant, Venice, Florida. We certify that each record document submitted is complete, accurate, and legible relative to the Work performed under our Contract, and

that the record documents comply with the requirements of the Contract Documents.

[Provide signature, print name, print signing party's corporate title, and date]".

1.2 RECORDING CHANGES

A. General:

1. At the start of the Project, label each record document to be submitted as, "PROJECT RECORD" using legible, printed letters. Letters on record copy of the Drawings shall be two inches high.
2. Keep record documents current. Make entries on record documents within two working days of receipt of information required to record the change.
3. Do not permanently conceal the Work until required information has been recorded.
4. Accuracy of record documents shall be such that future searches for items shown on the record documents may rely reasonably on information obtained from ENGINEER-accepted record documents.
5. Marking of Entries:
 - a. Use erasable, colored pencils (not ink or indelible pencil) for marking changes, revisions, additions, and deletions to record documents.
 - b. Clearly describe the change by graphic line and make notations as required. Use straight-edge to mark straight lines. Writing shall be legible and sufficiently dark to allow scanning of record documents into legible electronic files.
 - c. Date all entries on record documents.
 - d. Call attention to changes by drawing a "cloud" around the change(s) indicated.
 - e. Mark initial revisions in red. In the event of overlapping changes, use different colors for subsequent changes.

B. Drawings:

1. Record changes on copy of the Drawings. Submittal of CONTRACTOR-originated or -produced drawings as a substitute for recording changes on the Drawings is unacceptable.
2. Record changes on plans, sections, schematics, and details as required for clarity, making reference dimensions and elevations (to Project datum) for complete record documentation.
3. Record actual construction including:
 - a. Depths of various elements of foundation relative to Project datum.
 - b. Horizontal and vertical location of Underground Facilities referenced to permanent surface improvements. For each Underground Facility, including pipe fittings, provide dimensions to at least two permanent, visible surface improvements.

- c. Location of exposed utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.
 - d. Changes in structural and architectural elements of the Work, including changes in reinforcing.
 - e. Field changes of dimensions, arrangements, and details.
 - f. Changes made in accordance with Change Orders, Work Change Directives, and Field Orders.
 - g. Changes in details on the Drawings. Submit additional details prepared by CONTRACTOR when required to document changes.
4. Recording Changes for Schematic Layouts:
- a. In some cases on the Drawings, arrangements of conduits, circuits, piping, ducts, and similar items are shown schematically and are not intended to portray physical layout. For such cases, the final physical arrangement shall be determined by CONTRACTOR subject to acceptance by ENGINEER.
 - b. Record on record documents all revisions to schematics on Drawings, including: piping schematics, ducting schematics, process and instrumentation diagrams, control and circuitry diagrams, electrical one-line diagrams, motor control center layouts, and other schematics when included in the Contract. Record actual locations of equipment, lighting fixtures, in-place grounding system, and other pertinent data.
 - c. When dimensioned plans and dimensioned sections on the Drawings show the Work schematically, indicate on the record documents, by dimensions accurate to within one inch in the field, centerline location of items of Work such as conduit, piping, ducts, and similar items
 - 1) Clearly identify the Work item by accurate notations such as “cast iron drain”, “rigid electrical conduit”, “copper waterline”, and similar descriptions.
 - 2) Show by symbol or note the vertical location of Work item; for example, “embedded in slab”, “under slab”, “in ceiling plenum”, “exposed”, and similar designations. For piping not embedded, also provide elevation dimension relative to Project datum.
 - 3) Descriptions shall be sufficiently detailed to be related to Specifications.
 - d. ENGINEER may furnish written waiver of requirements relative to schematic layouts shown on plans and sections when, in ENGINEER’s judgment, dimensioned layouts of Work shown schematically will serve no useful purpose. Do not rely on waiver(s) being issued.
5. Supplemental Drawings:
- a. In some cases, drawings produced during construction by ENGINEER or CONTRACTOR supplement the Drawings and shall be included with record documents submitted by CONTRACTOR. Supplemental record drawings shall include drawings provided with Change Orders, Work Change Directives, and Field Orders and that cannot be incorporated into the Drawings due to space limitations.

- b. Supplemental drawings provided with record drawings shall be integrated with the Drawings and include necessary cross-references between drawings. Supplemental record drawings shall be on sheets the same size as the Drawings.
- c. When supplemental drawings developed by CONTRACTOR using computer-aided drafting/design (CADD) software are to be included in record drawings, submit electronic files for such drawings in AutoCAD as part of record drawing submittal. Submit electronic files on compact disc labeled, "Supplemental Record Drawings", together with CONTRACTOR name, Project name, and Contract name and number.

C. Specifications and Addenda:

- 1. Mark each Section to record:
 - a. Manufacturer, trade name, catalog number, and Supplier of each product and item of equipment actually provided.
 - b. Changes made by Addendum, Change Orders, Work Change Directives, and Field Orders.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

SECTION 01 78 43

SPARE PARTS AND EXTRA MATERIALS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. CONTRACTOR shall furnish spare parts data and extra materials for materials and equipment in accordance with the Contract Documents.
- B. List of Spare Parts and Extra Materials: With the Shop Drawings and product data for each Specification Section, submit a complete list of spare parts, extra stock materials, maintenance supplies, and special tools required for maintenance (“spare parts and extra materials”) for two years of operation, with unit prices in current United States funds, and source(s) of supply for each.
- C. Packaging and Labeling: Furnish spare parts and extra materials in manufacturer’s unopened cartons, boxes, crates, or other original, protective covering suitable for preventing corrosion and deterioration for maximum length of storage normally anticipated by manufacturer. Packaging of spare parts and extra materials shall be clearly marked and identified with name of manufacturer, applicable equipment, part number, part description, and part location in the equipment. Protect and package spare parts and extra materials for maximum shelf life normally anticipated by manufacturer.
- D. Storage Prior to Delivery to Owner: Prior to furnishing spare parts and extra materials to OWNER, store spare parts and extra materials in accordance with the Contract Documents and manufacturers’ recommendations.
- E. Delivery Time and Eligibility for Payment:
 - 1. Deliver to OWNER spare parts and extra materials upon Substantial Completion for equipment or system associated with the spare parts and extra materials. Do not deliver spare parts and extra materials before commencing start-up for associated equipment or system.
 - 2. Spare parts and extra materials are not eligible for payment until delivered to OWNER and CONTRACTOR’s receipt of OWNER’s countersignature on letter of transmittal.
- F. Procedure for Delivery to Owner: Deliver spare parts and extra materials to OWNER’s storage room at the Site at a location designated by OWNER. When spare parts and extra materials are delivered, CONTRACTOR and ENGINEER will mutually inventory the spare parts and extra materials delivered to verify compliance with the Contract Documents regarding quantity and part numbers. Additional

procedures for delivering spare parts and extra materials to OWNER, if required, will be developed by ENGINEER and complied with by CONTRACTOR.

G. Transfer Documentation:

1. Furnish on CONTRACTOR letterhead a letter of transmittal for spare parts and extra materials furnished under each Specification Section. Letter of transmittal shall accompany spare parts and extra materials. Do not furnish letter of transmittal separate from associated spare parts and extra materials.
2. Furnish an original signed letter of transmittal for each Specification Section. Upon delivery of specified quantities and types of spare parts and extra materials to OWNER, designated person from OWNER will countersign each original letter of transmittal indicating OWNER's receipt of spare parts and extra materials.
3. Letter of transmittal shall include the following:
 - a. Information required for letters of transmittal in Section 01 33 00, Submittal Procedures.
 - b. Transmittal shall list spare parts and extra materials furnished under each Specification Section. List each individual part or product and quantity furnished.
 - e. Provide space for countersignature by OWNER as follows: space for signature, space for printed name, and date.

H. CONTRACTOR shall be fully responsible for loss or damage to spare parts and extra materials until spare parts and extra materials are received by OWNER.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

SECTION 01 79 23

INSTRUCTION OF OPERATIONS AND MAINTENANCE PERSONNEL

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
1. CONTRACTOR shall furnish services of Supplier's operation and maintenance training specialists to instruct OWNER's personnel in recommended operation and maintenance procedures for materials and equipment furnished, in accordance with the Contract Documents.
 2. Supplier shall provide field training at the Site, unless otherwise required elsewhere in the Contract Documents.
 3. OWNER reserves the right to record training sessions on video for OWNER's later use in instructing OWNER's personnel.
- B. Scheduling of Training Sessions:
1. General:
 - a. CONTRACTOR shall coordinate training services with start-up and initial operation of materials and equipment on days and times, and in a manner, acceptable to OWNER, in accordance with the Contract Documents.
 - b. Training may be required outside of normal business hours to accommodate schedules of operations and maintenance personnel. Furnish training services at the required days and times at no additional cost to OWNER.
 2. Prerequisites to Training:
 - a. Training of OWNER'S personnel shall commence after acceptable preliminary operation and maintenance data has been submitted and work required in Section 01 75 11, Checkout and Startup Procedures is complete.
 - b. At option of OWNER or ENGINEER, training may be allowed to take place before, during, or after equipment start-up.
 3. Training Schedule Submittal:
 - a. Training Schedule Required: CONTRACTOR shall prepare and submit proposed training schedule for review and acceptance by ENGINEER and OWNER. Proposed training schedule shall show all training required in the Contract Documents, and shall demonstrate compliance with specified training requirements relative to number of hours of training, number of training sessions, and scheduling.

- b. Timing of Training Schedule Submittal: Submit initial training schedule at least thirty days before scheduled start of first training session. Submit final training schedule, incorporating revisions in accordance with ENGINEER's comments, no later than fourteen days prior to starting the first training session.
- c. OWNER reserves the right to modify personnel availability for training in accordance with process or emergency needs at the Site.

1.2 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer's instructors shall be factory-trained by manufacturer of material or equipment.
2. Manufacturer's instructors shall be proficient and experienced in conducting training of type required.
3. Qualifications of instructors are subject to acceptance by ENGINEER. If ENGINEER does not accept qualifications of proposed instructor, furnish services of replacement instructor with acceptable qualifications.

1.3 SUBMITTALS

A. Action Submittals: Submit the following:

1. Training Schedule: Detailed schedule of training sessions, demonstrating compliance with number of training sessions, hours required in the Contract Documents, and complying with the Contract Times. Submit training schedule submittals in accordance with time frames specified in this Section.

B. Informational Submittals: Submit the following:

1. Lesson Plan: Acceptable lesson plan for training on each material or equipment item, in accordance with the Contract Documents. Lesson plan shall comply with requirements of this Section. Include with lesson plan copy of handouts that will be used during training sessions. Provide lesson plan submittals in accordance with time frames specified in this Section.
2. Qualifications: Credentials of manufacturer's proposed operations and maintenance instructor(s). Credentials shall demonstrate compliance with requirements of this Section and shall include brief resume' and specific details of instructor's operating, maintenance, and training experience relative to the specific material and equipment for which instructor will provide training.

C. Closeout Submittals: Submit the following:

1. Trainee sign-in sheet for each training session. Submit to OWNER.

1.4 LESSON PLAN

- A. Supplier's lesson plan shall describe specific instruction topics, system components for which training will be furnished, and training procedures. Handouts, if any, to be used in training shall be included with the lesson plan. Describe in lesson plan "hands-on" demonstrations planned for training sessions.
- B. Submit acceptable lesson plan seven days prior to starting associated training.
- C. Lesson plan shall include estimated duration of each training segment.
- D. Lesson plan shall include the following:
 - 1. Equipment Overview (required for all types of operations and maintenance training):
 - a. Describe equipment's operating (process) function and performance objectives.
 - b. Describe equipment's fundamental operating principles and dynamics.
 - c. Identify equipment's mechanical, electrical, and electronic components and features. Group related components into subsystems and describe function of subsystem and subsystem's interaction with other subsystems.
 - d. Identify all support equipment associated with operation of subject equipment, such as air intake filters, valve actuators, motors, and other appurtenant items and equipment.
 - e. Identify and describe safety precautions and potential hazards related to operation.
 - f. Identify and describe in detail safety and control interlocks.
 - 2. Operations Personnel Training:
 - a. Equipment Overview: As described in Paragraph 1.4.D.1 of this Section.
 - b. Operation:
 - 1) Describe operating principles and practices.
 - 2) Describe routine operating, start-up, and shutdown procedures.
 - 3) Describe abnormal or emergency start-up, operating, and shutdown procedures that may apply.
 - 4) Describe alarm conditions and responses to alarms.
 - 5) Describe routine monitoring and recordkeeping procedures.
 - 6) Describe recommended housekeeping procedures.
 - c. Troubleshooting:
 - 1) Describe how to determine if corrective maintenance or an operating parameter adjustment is required.
 - 3. Mechanical Maintenance Training:
 - a. Equipment Overview: As described in Paragraph 1.4.D.1 of this Section.
 - b. Equipment Preventive Maintenance:

- 1) Describe preventative maintenance inspection procedures required to:
 - a) Inspect equipment in operation.
 - b) Identify potential trouble symptoms and anticipate breakdowns.
 - c) Forecast maintenance requirements (predictive maintenance).
 - 2) Define recommended preventative maintenance intervals for each component.
 - 3) Describe lubricant and replacement part recommendations and limitations.
 - 4) Describe appropriate cleaning practices and recommend intervals.
 - 5) Identify and describe use of special tools required for maintenance of equipment.
 - 6) Describe component removal, installation, and disassembly and assembly procedures.
 - 7) Perform “hands-on” demonstrations of preventive maintenance procedures.
 - 8) Describe recommended measuring instruments and procedures, and provide instruction on interpreting alignment measurements, as appropriate.
 - 9) Define recommended torquing, mounting, calibrating, and aligning procedures and settings, as appropriate.
 - 10) Describe recommended procedures to check and test equipment following corrective maintenance.
- c. Equipment Troubleshooting:
- 1) Define recommended systematic troubleshooting procedures.
 - 2) Provide component-specific troubleshooting checklists.
 - 3) Describe applicable equipment testing and diagnostic procedures to facilitate troubleshooting.
 - 4) Describe common corrective maintenance procedures with “hands on” demonstrations.
4. Instrumentation/Controls Maintenance Training:
- a. Equipment Overview: As described in Paragraph 1.4.D.1 of this Section.

1.5 TRAINING AIDS

- A. Manufacturer’s instructor shall incorporate training aids as appropriate to assist in the instruction. Provide handouts of text, tables, graphs, and illustrations as required. Other appropriate training aids include:
1. Audio-visual aids, such as videos, Microsoft Powerpoint presentations, overhead transparencies, posters, drawings, diagrams, catalog sheets, or other items.
 2. Equipment cutaways and samples, such as spare parts and damaged equipment.

3. Tools, such as repair tools, customized tools, and measuring and calibrating instruments.
- B. Handouts:
1. Manufacturer's instructor shall distribute and use descriptive handouts during training. Customized handouts developed especially for training for the Project are encouraged.
 2. Photocopied handouts shall be good quality and completely legible.
 3. Handouts should be coordinated with the instruction, with frequent references made to the handouts.
 4. Provide at least five copies of handouts for each training session.
- C. Audio-visual Equipment: Training provider shall provide audio-visual equipment required for training sessions. OWNER is not responsible for providing audio-visual equipment. Audio-visual equipment that training provider shall provide, as required, includes:
1. Laptop computer, presentation software, and suitable projector.
 2. As required, extension cords and spare bulb for projector.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

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SECTION 09 91 00

PAINTING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, tools, equipment, and incidentals as shown, specified, and required to furnish and apply paint systems.
 - a. CONTRACTOR is responsible for surface preparation and painting of all new and existing interior and exterior items and surfaces throughout the Project areas included under this and other Sections.
2. Extent of painting includes the Work specified below. Painting shown in schedules may not provide CONTRACTOR with complete indication of all painting Work. Refer to Article 2.2 of this Section where all surfaces of generic types specified are specified for preparation and painting according to their status, intended function, and location, using the painting system for that surface, function, and location as specified, unless specifically identified on the Drawings as a surface not to receive specified painting system.
 - a. All new and specifically identified existing surfaces and items except where natural finish of material is specified as a corrosion-resistant material not requiring paint; or is specifically shown as indicated by written note, or specified as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint them the same as adjacent similar materials or areas.
 - b. Surface preparation and painting of all new and specifically identified existing items, both interior and exterior, and other surfaces, including items furnished by OWNER, are included in the Work, except as otherwise shown or specified.

B. Coordination:

1. Review installation, removal, and demolition procedures under other Sections and coordinate them with the Work specified in this Section.
2. Coordinate painting of areas that will become inaccessible once equipment and similar fixed items have been installed.
3. Furnish information to ENGINEER on characteristics of finish materials proposed for use and ensure compatibility with prime coats used. Provide barrier coats over incompatible primers or remove and repaint as required. Notify ENGINEER in writing of anticipated problems using specified painting systems with surfaces primed by others. Reprime equipment

primed in factory and other factory-primed items that are damaged or scratched.

C. Related Sections:

1. Section 40 05 05, Exposed Piping Installation.
2. Section 40 60 05, Instrumentation and Control for Process Systems.

D. Work Not Included: The following Work is not included as painting Work, or are included under other Sections or in other contracts:

1. Shop Priming: Shop priming of structural metal, miscellaneous metal fabrications, other metal items and fabricated components such as shop-fabricated or factory-painted process equipment, plumbing equipment, heating and ventilating equipment, electrical equipment, and accessories shall conform to applicable requirements of this Section but are included under other Sections or in other contracts.
2. Pre-finished Items:
 - a. Items furnished with such finishes as baked-on enamel, porcelain, and polyvinylidene fluoride shall only be touched up at Site by CONTRACTOR using manufacturer's recommended compatible field-applied touchup paint.
 - b. Items furnished with finishes such as chrome plating or anodizing.
3. Concealed Surfaces: Non-metallic wall or ceiling surfaces in areas not exposed to view, and generally inaccessible areas, such as furred spaces, pipe chases, duct shafts, and elevator shafts.
4. Concrete surfaces below grade, unless otherwise shown or specified.
5. Concrete floors, unless specifically shown as a surface to be painted.
6. Exterior face of architectural precast concrete.
7. Corrosion-Resistant Metal Surfaces: Where the natural oxide of item forms a barrier to corrosion, whether factory- or Site-formed, including such materials as copper, bronze, muntz metal, terne metal, and stainless steel.
8. Operating Parts and Labels:
 - a. Do not paint moving parts of operating units, mechanical and electrical parts such as valve and damper operators, linkages, sensing devices, interior of motors, and fan shafts.
 - b. Do not paint over labels required by governing authorities having jurisdiction at Site, or equipment identification, performance rating, nameplates, and nomenclature plates.
 - c. Cover moving parts and labels during the painting with protective masking. Remove all protective masking upon completion of Work. Remove all paint, coatings, and splatter that comes in contact with such labels.
9. Structural and miscellaneous metals covered with concrete need not receive primers, intermediate, or finish coats of paint.

E. Description of Colors and Finishes:

1. Color Selection:
 - a. OWNER reserves the right to select non-standard colors for paint systems specified within ability of paint manufacturer to produce such non-standard colors. Provide such colors at no additional expense to OWNER.
2. Color Coding of Pipelines, Valves, Equipment, and Ducts:
 - a. Color-coding of pipelines, valves, equipment and ducts shall comply with applicable standards of ANSI A13.1, ANSI Z535.1, CFR 1910.144, and Recommended Standards for Water Works.. For piping and equipment not covered by the above standards, confirm color with OWNER and ENGINEER.
 - b. For equipment that is exposed-to-view, color will be selected by ENGINEER.

1.2 REFERENCES

A. Referenced Standards: Standards referenced in this Section are:

1. ANSI A13.1, Scheme for Identification of Piping Systems.
2. ANSI Z535.1, Safety Color Code.
3. ASTM D16, Terminology for Paint, Related Coatings, Materials and Applications.
4. ASTM D2200, Pictorial Surface Preparation Standards for Painting Steel Surfaces.
5. ASTM D4262, Testing Method for pH of Chemically Cleaned or Etched Concrete Surfaces.
6. ASTM D4263, Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
7. ASTM D4541, Test Methods for Pull-Off Strength of Coatings Using Portable Adhesion-Testers.
8. ASTM E329, Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.
9. Great Lakes Upper Mississippi River Board of Public Health and Environmental Managers (GLUMRB) Recommended Standards for Water Works.
10. GLUMRB, Recommended Standards for Wastewater Facilities.
11. Ozone Transport Commission, (OTC), OTC Model Rule for Architectural and Industrial Maintenance Coatings.
12. SSPC PA 2, Measurement of Dry Coating Thickness with Magnetic Gages.
13. SSPC VIS 1, Visual Standard for Abrasive Blast Cleaned Steel.
14. SSPC VIS 2, Method of Evaluating Degree of Rusting/Painted Steel Surfaces.

15. SSPC Volume 2, Systems and Specifications.

1.3 DEFINITIONS

- A. Coating terms defined in ASTM D16 apply to this Section.

1.4 QUALITY ASSURANCE

- A. Applicator Qualifications:
1. Engage a single applicator regularly performing installation of painting systems, with documented skill and successful experience in installing types of products required and agrees to employ only tradesmen trained, skilled, and with successful experience in installing types of products specified.
- B. Testing Agency Qualifications: Provide independent testing agency with experience and capability to satisfactorily conduct testing specified in accordance with ASTM E329. Testing agency shall be selected by OWNER and paid for by CONTRACTOR.
- C. Source Quality Control:
1. Obtain products from manufacturers that will provide services of a qualified manufacturer's representative at Site at commencement of painting Work to advise on products, mock-ups, installation, and finishing techniques, at completion of the Work to advise ENGINEER on acceptability of completed Work, and during course of Work as requested by ENGINEER.
 2. Submit "or equal" products, when proposed, with direct comparison to products specified, including information on durability, adhesion, color and gloss retention, percent solids, VOC's grams per liter, and recoatability after curing.
 3. "Or equal" manufacturers shall furnish same color selection as manufacturers specified, including intense chroma and custom pigmented colors in painting systems.
 4. Color Pigments: Provide pure, non-fading, applicable types to suit surfaces and services indicated. Comply with the following:
 - a. Lead and Chromate: Lead and chromate content shall not exceed amount allowed by authorities having jurisdiction.
 - b. Through CONTRACTOR, paint manufacturer shall notify ENGINEER of colors that are not suitable for long-term color retention in areas subject to hydrogen sulfide fume exposure.
 - c. Manufacturer shall identify colors that meet requirements of authorities having jurisdiction at Site for use in locations subject to contact with potable water or water that will be treated to become potable.

- d. Comply with paint manufacturers' recommendations on preventing coating contact with levels of carbon dioxide and carbon monoxide that may cause yellowing during application and initial stages of curing of paint coatings.

D. Regulatory Requirements:

1. Comply with regulatory requirements of authorities having jurisdiction over the Site.

E. Pre-Painting Conference:

1. Conduct a pre-painting conference at the Site to review specified requirements. Meeting attendees shall include painting applicator and its foreman, paint manufacturer's technical representative, installers of other work in and around painting that must follow painting Work, ENGINEER, and other representatives directly concerned with performance of painting Work.

1.5 SUBMITTALS

A. Action Submittals: Submit the following:

1. Product Data:
 - a. Copies of manufacturer's technical data sheets, including surface preparation, number of coats, dry film thickness, test performance data including paint analysis, VOC and chemical component content in comparison to maximum allowed by the Contract Documents, and application instructions for each product proposed for use.
 - b. Submit proof of acceptability of proposed application techniques by paint manufacturer selected.
 - c. Copies of CONTRACTOR's proposed protection procedures in each area of the Work explaining methods of protecting adjacent surfaces from splatter, for confining application procedures in a manner that allows other work adjacent to surface preparation and painting Work to proceed safely and without interruption, and for maintaining acceptable application, curing, and environmental conditions during and after painting systems application.
 - d. List each material and cross-reference to the specific painting system and application, including a list of site-specific surfaces to which painting system will be applied. Identify by manufacturer's catalog number and general classification. State number of gallons of each product being purchased for delivery to Site and square foot area calculated to be covered by each painting system specified based on theoretical loss of 20 percent. Where actual area to be covered by paint system exceeds area submitted to ENGINEER for that system, proof of additional material purchase shall be provided to ENGINEER.

Calculated coverage shall be as specified for each component of each painting system specified. This requirement does not take precedence over CONTRACTOR's responsibility to provide dry film thickness required for each component of each painting system.

- e. Identify maximum exposure times allowable for each paint system component before next coat of paint can be applied. Submit proposed methods for preparing surfaces for subsequent coats if maximum exposure times are exceeded.
- f. Information on curing times and environmental conditions that affect curing time of each paint system component and proposed methods for accommodating variations in curing time. Identify this information for each painting system in the Work.
- g. Specification for spray equipment with cross-reference to paint manufacturer's recommended equipment requirements.

2. Samples:

- a. Copies of manufacturer's complete color charts for each coating system.

B. Informational Submittals: Submit the following:

1. Certificates:

- a. Certificate from paint manufacturer stating that materials meet or exceed Contract Documents requirements.
- b. CONTRACTOR shall provide notarized statement verifying that all painting systems are compatible with surfaces specified. All painting systems components shall be reviewed by an authorized technical representative of paint manufacturer for use as a compatible system. Verify that all painting systems are acceptable for exposures specified and that paint manufacturer is in agreement that selected systems are proper, compatible, and are not in conflict with paint manufacturer's recommended specifications. Show by copy of transmittal form that a copy of letter has been transmitted to paint applicator.

2. Test Reports:

- a. Certified laboratory test reports for required performance and analysis testing in compliance with ASTM E329.
- b. Adhesion testing plan and procedures.
- c. Results of adhesion testing on existing surfaces containing paints or other coatings to be topcoated with paint systems specified. Prior to adhesion testing, submit a testing plan establishing methods, procedures and number of tests in each area where existing coatings are to remain and become substrate for painting Work. Based on results of adhesion testing, recommend methods, procedures, and painting system modifications, if necessary, for proceeding with Work.
- d. Proposed methods for testing, handling, and disposal of waste generated during Work.

- e. Results of alkalinity and moisture content tests performed per ASTM D4262 and ASTM D4263.
 - f. Results of film thickness, holidays, and imperfections tests.
 - 3. Manufacturer's Instructions: Provide paint manufacturer's storage, handling, and application instructions prior to commencing painting Work at Site.
 - 4. Special Procedure Submittals:
 - a. Proposed protection procedures for each area of Work, explaining methods of protecting adjacent surfaces from splatter, for confining application procedures in a manner that allows other work adjacent to surface preparation and painting Work to proceed safely and without interruption.
 - b. Site-specific health and safety plan.
 - c. Procedures for maintaining acceptable application, curing and environmental conditions during and after painting systems application.
 - d. Procedures for providing adequate lighting, ventilation, and personal protection equipment relative to painting Work.
 - 5. Qualifications:
 - a. Applicator.
 - b. Testing laboratory.
- C. Closeout Submittals: Submit the following:
- 1. Maintenance Manual: Upon completion of the painting Work, furnish ENGINEER five copies of detailed maintenance manual including the following information:
 - a. Complete and updated product catalog of paint manufacturer's currently available products including complete technical information on each product. Identify product names and numbers of each product used in the painting Work.
 - b. Name, address, e-mail address and telephone number of manufacturer, local distributor, applicator and technical representative.
 - c. Detailed procedures for routine maintenance and cleaning.
 - d. Detailed procedures for light repairs such as dents, scratches and staining.
 - 2. Statement of Application: Upon completion of the painting Work, submit a notarized statement to ENGINEER signed by CONTRACTOR and painting applicator stating that Work complies with requirements of the Contract Documents and that application methods, equipment, and environmental conditions were proper and adequate for conditions of installation and use.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Product Delivery Requirements: Deliver products to Site in original, new, and unopened packages and containers, accurately and legibly and accurately labeled with the following:
1. Container contents, including name and generic description of product.
 2. Manufacturer's stock number and date of manufacture.
 3. Manufacturer's name.
 4. Contents by volume, for major pigment and vehicle constituents.
 5. Grams per liter of volatile organic compounds.
 6. Thinning instructions, where recommended.
 7. Application instructions.
 8. Color name and number.
- B. Product Storage Requirements:
1. Store acceptable materials at Site.
 2. Store in an environmentally controlled location as recommended in paint manufacturer's written product information. Keep area clean and accessible. Prevent freezing of products.
 3. Store products that are not in actual use in tightly covered containers.
 4. Comply with health and fire regulations of authorities having jurisdiction at Site.
- C. Product Handling Requirements:
1. Handle products in a manner that minimizes the potential for contamination, or incorrect product catalyzation.
 2. Do not open containers or mix components until necessary preparatory work has been completed and approved by ENGINEER and painting Work will start immediately.
 3. Maintain containers used in storing, mixing, and applying paint in a clean condition, free of foreign materials and residue.

1.7 SITE CONDITIONS

- A. Site Facilities:
1. Supplemental heat sources, as required to maintain both ambient and surface temperatures within range recommended by paint manufacturer for paint system applications, are not available at the Site.
 2. Provision of supplemental heat energy sources, power, equipment, and operating, maintenance, and temperature-monitoring personnel is CONTRACTOR's responsibility.

3. Do not use heat sources that emit carbon dioxide or carbon monoxide into areas being painted. Properly locate and vent heat sources to exterior so that paint systems and personnel are unaffected by exhaust products.

B. Existing Conditions

1. Existing surfaces to receive painting Work shall have their surfaces prepared to meet requirements of painting systems specified. Prior to initiating painting Work, perform adhesion tests on existing surfaces to be painted. Perform testing per ASTM D4541 or other method acceptable to ENGINEER. Number and location of tests shall be sufficient to determine the condition of existing coatings and suitability of existing coatings to remain to provide an acceptable substrate for new coatings. Submit testing plan prior to testing and provide ENGINEER the adhesion test results.
2. Provide abrasive blasting, scraping, or other abrading or surface film removal, or preparatory techniques accepted by ENGINEER.
3. Before commencing painting in an area, surfaces to be painted and floors shall be cleaned of dust using commercial vacuum cleaning equipment equipped with high-efficiency particulate air (HEPA) filters and dust containment systems.
4. After painting operations have started in a given area, cleaning only with commercial vacuum cleaning equipment with high-efficiency particulate air (HEPA) filters and dust containment systems.

C. Environmental Requirements:

1. Comply with manufacturer's published requirements.

D. Protection:

1. Cover or otherwise protect finished Work of other trades and those surfaces not being painted concurrently and not to be painted.
2. During surface preparation and painting, facility shall remain in operation. Use procedures that prevent contamination of process or cause or require facility shutdown.
3. Coordinate and schedule surface preparation and painting to avoid exposing personnel to hazards associated with painting Work. Provide required personnel safety equipment per requirements of authorities having jurisdiction at Site.
4. Submit protection procedures to be employed. Do not begin surface preparation and painting Work until ENGINEER accepts protection techniques proposed by CONTRACTOR.
5. When working with flammable materials, provide fire extinguishers and post temporary signs warning against smoking and open flame.

PART 2 - PRODUCTS

2.1 PAINTING SYSTEM MANUFACTURERS

- A. Products and Manufacturers: Where referenced under painting systems, provide painting systems manufactured by the following:
1. Tnemec Company, Incorporated (TCI).
 2. The Carboline Company, part of StonCor Group, an RMP Company (TCC).
 3. Sherwin-Williams Company (SWC).
 4. Or equal.

2.2 PAINTING SYSTEMS

- A. New and Existing Surfaces: Non-Submerged, Interior; Buried, Submerged and Intermittently Submerged, OTC Compliant; Interior and Exterior:
1. Surface Preparation: Comply with manufacturer's published recommendations for material and surface condition.
 2. Filler, Surfacer and Patching Compound:
 - a. Products: Provide one of the following:
 - 1) Epoxy-based products, number of coats, and dry film thickness recommended in manufacturer's published data sheets for finish coats and surfaces specified.
 3. Primer/Intermediate:
 - a. Products: Provide one of the following:
 - 1) Epoxy-based products, number of coats, and dry film thickness recommended in manufacturer's published data sheets for finish coats and surfaces specified.
 4. Finish for All Surfaces Except Wood; Semi-gloss:
 - a. Generic Components:
 - 1) Minimum 62-percent volume solids, high-build, two-component, polyamide-catalyzed epoxy or polyamido-amine epoxy; 250 grams per gallon VOC, maximum.
 - b. Products and Manufacturers: Provide products of one of the following:
 - 1) Series V69 Hi-Build Epoxoline (TCI); Carboguard 890 Series (TCC); Macropoxy HS (SWC)- two coats, 3.0 to 6.0 dry mils per coat, 107 to 201 square feet per gallon.

2.3 INSTRUMENTS

- A. Instruments:
1. Contractor to utilize a dry-film thickness gauge for checking film thickness, a holiday detector to detect holidays or holes in the coating, and a set of visual standards to check surface preparation. Calibrate dry film thickness gauge at Site using Bureau of Standards standard shim blocks.

2. Products and Manufacturers: Provide the following:
 - a. Film Thickness Testers: Model FM-III manufactured by Mikrotest, or equal.
 - b. Holiday detector shall be Model M-1 as manufactured by Tinker & Rasor, or equal.
 - c. Visual Standards: ASTM D2200, Swedish Standards, SSPC VIS 1.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas and conditions under which painting Work is to be performed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of Work. Do not proceed with Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.
- B. Do not paint over existing paint where there is no assurance that existing paint will provide an acceptable surface for long-term adherence and durability of painting systems specified, or where paint manufacturer requires removal of all existing paint to recommend use of specified painting system.

3.2 SURFACE PREPARATION

- A. General:
 1. Comply with paint manufacturer's published recommendations for products, surface condition, and surface preparation.

3.3 PROTECTION OF PROPERTY AND STRUCTURES

- A. Protect property and structures adjacent to the Work from waste residues resulting from cleaning, surface preparation, and painting Work.
- B. Use shrouding, vacuum blasting, or other acceptable methods for cleaning and surface preparation of exterior surfaces.
- C. During blast cleaning and surface preparation of interior and exterior surfaces, control exhausting of dust and grit using shrouding, negative-pressure containment/dust collection systems, or other means to protect adjacent property and structures and prevent dust and grit from escaping. Similarly, control removal and temporarily store residues to protect adjacent property and structures.

- D. For painting of exterior surfaces, use rollers, shrouding, or other acceptable methods as required to protect adjacent property and structures from wind-blown paint residues.
- E. Submit proposed procedures for cleaning, surface preparation, and paint application that describe in detail methods to be used to protect adjacent property and structures from residues. Do not proceed with cleaning, surface preparation, or painting until proposed procedures are accepted by ENGINEER.

3.4 MATERIALS PREPARATION

- A. General: Mix and prepare painting products in strict accordance with paint manufacturer's product data sheets.

3.5 APPLICATION

- A. General:
 - 1. Apply paint systems by brush, roller, or airless spray per paint manufacturer's recommendations and in compliance with Paint Application Specifications No. 1 in SSPC Volume 2, where applicable, and in strict accordance with paint manufacturer's product data sheets.
 - 2. Surfaces of items not normally exposed-to-view do not require same color as other components of system of which they are a part, but require same painting system specified for exposed surfaces of system.
 - 3. Paint backs of access panels and removable or hinged covers to match exposed surfaces.
 - 4. Omit field-applied primer on metal surfaces that have been primed in the shop. Touch-up paint to shop-primed coats and pre-finished items only when approved by ENGINEER using compatible primers and paint manufacturer's recommended compatible field-applied finishes.
 - 5. Welds shall be stripe-coated with intermediate or finish coat of paint after application of prime coat.
- B. Minimum/Maximum Paint Film Thickness: Comply with manufacturer's published recommendations for coating type and surface.
- C. Scheduling Surface Preparation and Painting: Comply with manufacturer's published recommendations for coating type and surface.
- D. Prime Coats: Recoat primed and sealed walls and ceilings where there is evidence of suction spots or unsealed areas in first coat, to result in a finish coat with no burn-through or other defects caused by insufficient sealing.

- E. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage.
- F. Brush Application:
 - 1. Brush-out and work all brush coats onto the surfaces in an even film. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections are unacceptable. Neatly draw all glass and color break lines.
 - 2. Brush-apply all primer or first coats, unless otherwise allowed to use mechanical applicators.
- G. Mechanical Applicators:
 - 1. Use mechanical methods for applying paint when allowed by applicable ordinances, paint manufacturer, and approved by ENGINEER.
 - 2. Limit roller applications, if approved by ENGINEER, to interior wall finishes for second and third coats. Apply each roller coat to provide equivalent hiding as brush-applied coats.
 - 3. Where spray application is used, apply each coat to provide equivalent hiding of brush-applied coats. Do not double back with spray equipment for purpose of building up film thickness of two coats in one pass.
- H. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint Work not in compliance with specified requirements as required by ENGINEER.

3.6 FIELD QUALITY CONTROL

- A. Notify ENGINEER after completing each coat of paint. After inspection and checking of film thickness, holidays, and imperfections, and after acceptance by ENGINEER, proceed with succeeding coat. Perform testing using testing instruments specified in Article 2.4 of this Section.
 - 1. ENGINEER will witness all testing and shall be notified of scheduled testing at least twenty-four hours in advance.
 - 2. Apply additional coats, if required, to produce specified film thickness and to correct holidays and to completely fill all surface air holes.
- B. For magnetic substrates, measure thickness of dry film nonmagnetic coatings following recommendations of SSPC PA-2. These procedures supplement manufacturers' approved instructions for manual operation of measurement gauges and do not replace such instructions.
- C. Record time, location, number of coats, dry film thickness, holidays, and other imperfections and submit testing results to ENGINEER.

3.7 PROTECTION

- A. Provide “Wet Paint” signs as required to protect newly painted finishes. After completing painting Work, remove temporary protective wrappings provided for protection of the Work.

3.8 ADJUSTMENT AND CLEAN-UP

- A. Correct damage to work of other trades by cleaning, repairing or replacing, and repainting, as acceptable to ENGINEER.
- B. During progress of the Work, remove from Site all discarded paint products, rubbish, cans, and rags at end of each workday.
- C. Upon completion of painting, clean paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.
- D. At completion of Work of other trades, touch-up and restore all damaged or defaced painted surfaces as determined by ENGINEER.

+ + END OF SECTION + +

SECTION 26 05 05

GENERAL PROVISIONS FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals shown, specified, and required to complete the electrical Work.
2. Demolition: Responsibility for electrical demolition is indicated in Section 01 11 13, Summary of Work.

B. Coordination:

1. Review installation procedures and schedules under other Specification Sections and coordinate with other trades the installation of electrical items that will be installed with or within formwork, walls, partitions, ceilings, and panels.
2. Coordination and Intent of Electrical Drawings:
 - a. Dimensions on Drawings related to equipment are based on equipment of certain manufacturers. Verify the dimensions of equipment furnished to space available at the Site and allocated to the equipment.
 - b. Drawings show the principal elements of the electrical Work, and are not intended as detailed working drawings for the electrical Work. Drawings supplement and complement the Specifications and other Contract Documents relative to principal features of electrical systems.
 - c. Equipment and devices provided under this Contract shall be properly connected and interconnected with other equipment and devices for successful operation of complete systems, whether or not all connections and interconnections are specifically mentioned or shown in the Contract Documents.
 - d. Drawings are provided for CONTRACTOR's guidance in fulfilling the intent of the Contract Documents CONTRACTOR shall comply with Laws and Regulations, including safety and electrical codes, and provide materials, equipment, appurtenances, and specialty items necessary for complete and operable systems.
3. Obtain from OWNER record drawings required to execute the Work.
4. Field Coordination:
 - a. Provide materials, equipment, and services to interface with existing circuits. Field-verify system and equipment requirements prior to modifying existing systems.

- b. Coordinate the interface of equipment with OWNER's personnel and field conditions.
 - c. Field-compare existing starter and panel control circuit terminations from record documents with existing circuits.
 - d. Field-trace existing circuits as required to interface the equipment provided.
 - e. Field-identify terminations for starters and panel controls for follow function for re-connection.
- C. Related Sections:
- 1. Section 09 91 00, Painting.
 - 2. Section 40 60 05, Instrumentation and Control for Process Systems.
- D. Work Included in This Contract but Specified Elsewhere:
- 1. Concrete for conduit curb shall comply with Structural drawing details.
 - 2. Shop painting and surface preparation shall comply with Section 09 91 00, Painting, unless otherwise specified in Division 26 Sections.
- E. Area Classifications:
- 1. Materials, equipment, and incidentals shall be suitable for the area classification(s) shown, specified, and required.
 - 2. Wet and Corrosive Locations: Comply with NEC and NEMA requirements for corrosive locations. Enclosures in corrosive locations shall conform to NEMA 4X requirements unless specified otherwise.
 - 3. Hazardous Locations: Comply with NEC requirements for the Class and Division designated.
 - 4. Dusty Locations: Indoor areas not designated as hazardous, corrosive, or wet are dusty locations. Comply with NEC and NEMA 12 requirements unless specified otherwise.

1.2 QUALITY ASSURANCE

- A. Qualifications:
- 1. Electrical Subcontractor:
 - a. Electrical Subcontractor shall have not less than five years experience installing electrical systems of the types required for the Project.
 - b. Electrical Subcontractor shall possess a valid electricians' and contractors' license in the jurisdiction where the Site is located.
 - c. Submit the following information for not less than three successful, completed projects: project name and location; year completed; name and contact information for: prime contractor for whom electrical Subcontractor worked, project owner, and project engineer or architect, including addresses and telephone numbers.

- B. Component Supply and Compatibility:
 - 1. Materials and equipment similar to each other shall be from the same manufacturer for uniformity.
- C. Regulatory Requirements:
 - 1. Permits: Refer to the General Conditions, Supplementary Conditions, and other parts of the Contract Documents for responsibilities relative to obtaining and paying for permits, licenses, and inspection fees.

1.3 SUBMITTALS

- A. General:
 - 1. To the extent practical, submit Shop Drawings and other CONTRACTOR submittals for each Specification Section into the smallest number of submittals possible. Do not furnish partial submittals.
 - 2. Review of equipment submittals does not relieve CONTRACTOR of responsibility for providing complete and successfully operating systems.
- B. Action Submittals: Submit the following:
 - 1. Shop Drawings:
 - a. Internal wiring diagram and drawings indicating all connections to components and numbered terminals for external connections.
 - b. Dimensioned plan, section, elevations, and panel layouts showing means for mounting, conduit connection, and grounding.
 - c. List of components including manufacturer's name and catalog number (or part number) for each.
 - 2. Product Data:
 - a. Manufacturer's name and product designation or catalog number.
 - b. Electrical ratings.
 - c. Manufacturer's technical data and specifications.
 - d. Manufacturer's indication of compliance with applicable reference standards.
 - e. Painting and coating systems proposed.
 - 3. Test Procedures: Proposed testing procedures and testing limitations for source quality control testing and field quality control testing.
- C. Informational Submittals: Submit the following:
 - 1. Manufacturer's Instructions:
 - a. Installation data and instructions.
 - b. Instructions for handling, starting-up, and troubleshooting.
 - 2. Source Quality Control Submittals: Results for required shop testing.
 - 3. Field Quality Control Submittals: Results for required field testing.
 - 4. Qualifications:
 - a. Electrical Subcontractor.

- D. Closeout Submittals: Submit the following:
1. Record Documentation:
 - a. System Record Drawings: Include the following:
 - 1) One-line wiring diagram of the electrical distribution system.
 - 2) Actual, in-place conduit and cable layouts with schedule of conduit sizes and number, and size of conductors.
 - 3) Layouts of the power and lighting arrangements and the grounding system.
 - 4) Control schematic diagrams, with terminal numbers and control devices identified, for all equipment.
 - b. Record documents shall indicate final equipment and field installation information.

PART 2 – PRODUCTS

- A. Performance Criteria:
1. Electrical equipment shall be capable of operating successfully at full-rated load, without failure, with ambient outside air temperature of 30 degrees F to 120 degrees F and an elevation of 100 feet above mean sea level.
 2. Unless specified otherwise, electrical equipment shall have ratings based on 75 degrees C terminations.
- B. Testing Laboratory Labels: Electrical material and equipment shall bear the label of Underwriters' Laboratories, Inc. or other nationally recognized, independent testing laboratory, where standards have been established and label service applies.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine conditions under which Work will be performed and notify ENGINEER in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with Work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. General:
1. Install materials and equipment in accordance with the Contract Documents, Laws and Regulations, approved (and accepted, as applicable) Shop Drawings and other CONTRACTOR submittals, and manufacturer's recommendations.
 2. Provide tools and equipment required to trace circuits necessary for proper execution of the Work.

3. Define and identify all wiring, circuit terminations, and equipment to be modified to ensure proper interface of components. The Contract Price includes all costs associated with field services specified for a complete and functional system.
- B. Staging, Sequencing, and Coordination with Existing Facilities:
1. Schedule, sequence, and install materials and equipment in accordance with Section 01 14 16, Coordination with Owner's Operations.
 2. Perform the Work in a manner that will not interfere with the existing equipment and facilities or cause interruption of the functions of the Site, unless specified otherwise or otherwise allowed by OWNER.
 3. When operation of existing facilities and Site is disrupted due to CONTRACTOR's operations, comply with Section 01 14 16, Coordination with Owner's Operations, unless otherwise allowed by OWNER.
 4. Where the Work ties in with existing installations, take precautions and provide safeguards in connecting the Work to existing operating circuits to prevent interruption to existing circuits. Connection of Work to existing circuits shall be performed in the presence of OWNER and ENGINEER.
 5. Interruptions of existing circuits, not addressed in Section 01 14 16, Coordination with Owner's Operations, shall be coordinated with the OWNER who will determine the length of time a circuit may be de-energized to maintain the OWNER's processes in dependable and safe operation.

3.3 FIELD QUALITY CONTROL

- A. Field Quality Control – General:
1. Perform field quality control for electrical Work in accordance with the Contract Documents.
- B. Site Tests:
1. Prior to requesting certificate of Substantial Completion, demonstrate to ENGINEER that electrical systems and electrically-operated equipment installed or modified under the Contract operates in accordance with the Contract Documents and operates as required.
 2. Perform the following operational tests on electrical systems:
 - a. Operate power circuits to verify proper operation and connection to electrical systems materials and equipment, including mechanical key-interlocks for circuit breakers.
 - b. Operate control circuits, including pushbuttons, indicating lights, and similar devices, to verify proper connection and function. Operate all devices, such as pressure switches, flow switches, and similar devices, to verify that shutdowns and control sequences operate as required.
 3. Prepare and submit report on the equipment demonstration and operating field quality control tests. Report shall include complete information on the tests performed and results.

C. Manufacturer's Services:

1. Furnish at the Site qualified, factory-trained representative(s) of equipment manufacturers for the services indicated in the Contract Documents.

+ + END OF SECTION + +

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals shown, specified, and required to furnish and install low-voltage conductors and cabling.
 2. Types of cabling required include:
 - a. Insulated cable for installation in raceways.
- B. Related Sections:
1. Section 26 05 53, Identification for Electrical Systems.

1.2 REFERENCES

- A. Standards referenced in this Section are:
1. ANSI/NETA ATS, Acceptance Testing Specifications for Electrical Power Equipment and Systems.
 2. ASTM B3, Specification for Soft or Annealed Copper Wire.
 3. ASTM B8, Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard or Soft.
 4. UL 44, Thermoset-Insulated Wires and Cables.
 5. UL 1277, Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with the following:
1. NEC Article 300, Wiring Methods.
 2. NEC Article 310, Conductors for General Wiring.

1.4 SUBMITTALS

- A. Action Submittals: Submit the following:
1. Product Data:

- a. Manufacturer's literature, specifications, and engineering data for low volt insulated cable proposed for use.
- B. Informational Submittals: Submit the following:
1. Field Quality Control Submittals:
 - a. Written results of field insulation resistance tests.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Insulated Cable In Raceways:
1. Application: Use for circuits located indoors and outdoors.
 2. Manufacturers: Provide products of one of the following:
 - a. Southwire.
 - b. The Okonite Company.
 - c. American Insulated Wire.
 - d. General Cable.
 - e. Or equal.
 3. Material: Single conductor copper cable complying with ASTM B3 and ASTM B8 with flame-retardant, moisture- and heat-resistant insulation rated for 90 degrees C in dry or wet locations, listed by UL as Type XHHW or RHW complying with UL 44.
 4. Wire Sizes: Not smaller than No. 12 AWG for power and lighting and No. 14 AWG for 120-volt control circuits.
 5. Stranding: 600-volt cable shall be stranded, except that solid cable, No. 10 and smaller may be used for lighting circuits.
- B. Cable Connectors, Solderless Type:
1. Products and Manufacturers: Provide products of one of the following:
 - a. T&B Sta-Kon.
 - b. Burndy Hylug.
 - c. Or equal.
 2. For wire sizes No. 4 AWG and above, use either compression type or bolted type with silver-plated contact faces.
 3. For wire sizes up to and including No. 6 AWG, use compression type. Alarm and control wire shall be terminated using forked type connectors at terminal boards.
 4. For wire sizes No. 250 KCMIL and larger, use connectors with at least two cable clamping elements or compression indents and provision for at least two bolts for joining to apparatus terminal.
 5. Properly size connectors to fit fastening device and wire size. Connectors shall be rated for 90 degree C, 600 volts.

C. Cable Splices:

1. Products and Manufacturers:
 - a. Compression-Type Splices: Provide one of the following:
 - 1) Burndy Hylink.
 - 2) T&B Color-Keyed Compression Connectors.
 - 3) Or equal.
 - b. Spring Connectors: Provide one of the following:
 - 1) Buchanan B-Cap.
 - 2) T&B Wire Connector.
 - 3) Or equal.
2. For wire sizes No. 8 AWG and larger, splices shall be made up with compression type copper splice fittings. Splices shall be taped and covered with materials recommended by cable manufacturer to provide insulation equal to that on conductors.
3. For wire sizes No. 10 AWG and smaller, splices may be made up with pre-insulated spring connectors.
4. For wet locations, splices shall be waterproof. Compression type splices shall be waterproofed by sealant-filled, thick wall, heat shrinkable, thermosetting tubing or by pouring thermosetting resin into mold that surrounds the joined conductor. Spring connector splices shall be waterproofed with sealant filler.
5. Splices shall be suitably sized for cable, rated 90 degrees C, and 600 volts.

D. Wire and Cable Markers:

1. Provide wire and cable markers in accordance with Section 26 05 53, Identification for Electrical Systems.

2.2 SOURCE QUALITY CONTROL

A. Factory Tests:

1. Factory-test wire and cable in accordance with UL standards.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Install cables complete with proper terminations at both ends. Check and correct for proper phase sequence and proper motor rotation.

B. Pulling:

1. Use insulating types of pulling compounds containing no mineral oil.
2. Pulling tension shall be within limits recommended by wire and cable manufacturer.

3. Use dynamometer where mechanical means are used.
 4. Cut off section subject to mechanical means.
- C. Bending Radius: Limit to minimum of six times cable overall diameter.
- D. Slack: Provide maximum slack at all terminal points.
- E. Splices:
1. Where possible, install cable continuous, without splice, from termination to termination.
 2. Where required, splice as shown and also where required for cable installation. Splices below grade, in manholes, handholes, and wet locations shall be waterproof.
 3. Splices are not allowed in conduits.
- F. Identification:
1. Identify conductors in accordance with Section 26 05 53, Identification for Electrical Systems.
 2. Identify power conductors by circuit number and phase at each terminal or splice location.
 3. Identify control and status wiring using numeral tagging system.
- G. Color-code power cables as follows:
1. No. 8 AWG and Smaller: Provide colored conductors.
 2. No. 6 AWG and Larger: Apply general purpose, flame retardant tape at each end, wrapped in overlapping turns to cover an area of at least two inches.
 3. Colors: Match color scheme in use at the Site. If the Site does not have an existing color scheme, use the following colors:

System	Conductor	Color
All Systems	Equipment Grounding	Green
240/120 Volts Single-Phase, Three-Wire	Grounded Neutral One Hot Leg Other Hot Leg	White Black Red
208Y/120 Volts Three-Phase, Four-Wire	Grounded Neutral Phase A Phase B Phase C	White Black Red Blue
240/120 Volts Three-Phase, Four-Wire Delta, Center Tap Ground on Single-Phase	Grounded Neutral Phase A High (wild) Leg Phase C	White Black Orange Blue

System	Conductor	Color
480Y/277 Volts Three-Phase, Four-Wire	Grounded Neutral Phase A Phase B Phase C	Gray Brown Orange Yellow

3.2 FIELD QUALITY CONTROL

A. Site Tests:

1. Test each electrical circuit after permanent cables are in place, to demonstrate that circuit and equipment are connected properly and will perform satisfactorily, free from improper grounds and short circuits.
2. Individually test 600-volt cable mechanical connections after installation and before they are put in service, with calibrated torque wrench. Values shall be in accordance with manufacturer's recommendations.
3. Individually test 600-volt cables for insulation resistance between phases and from each phase to ground. Test after cables are installed and before they are put in service, with Megger for one minute at voltage rating recommended by cable manufacturer or in accordance with ANSI/NETA ATS recommendations.
4. Insulation resistance for each conductor shall not be less than value recommended by cable manufacturer. Cables not meeting recommended value or that fail when tested under full load conditions shall be replaced with a new cable for full length.
5. Where existing cables are spliced to cables provided under the Project, test existing cables prior to splicing. Test cables at 1,000 vdc for one minute. Entire spliced cable installation shall be re-tested after splice is completed. Existing cable that fails or has value less than two megohms shall be brought to attention of ENGINEER and splicing shall not proceed until condition is acceptable.

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SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install hangers and supports for electrical systems.
2. Area Classifications: Materials shall be suitable for the area classification(s) shown or indicated on the Drawings, and specified in Section 26 05 05, General Provisions for Electrical Systems.

B. Related Sections:

1. Section 26 05 05, General Provisions for Electrical Systems.
2. Section 26 05 33.13, Rigid Conduits.

1.2 REFERENCES

A. Standards referenced in this section are:

1. ASTM A123/A123M, Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
2. ASTM A1011/A1011M, 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.
3. ASTM E84, Test Method For Surface Burning Characteristics of Building Materials

1.4 SUBMITTALS

A. Action Submittals: Submit the following:

1. Shop Drawings:
 - a. Detailed installation drawings showing dimensions and compatibility with proposed layout.
2. Product Data:
 - a. Manufacturer's name, product designation, and catalog number of each material item proposed for use.
 - b. Manufacturer's specifications including material, dimensional and weight data, and load capacity for each supporting system component proposed for use.

- c. Pictorial views and corresponding identifying text of each component proposed for installation.
 - d. Documentation that confirms product compatibility with Laws and Regulations.
- B. Informational Submittals: Submit the following:
- 1. Certifications:
 - a. Submit certifications required under this Section.
 - 2. Manufacturer's Instructions:
 - a. Manufacturer's installation instructions, including recommended tightening torque values for all nuts and bolts.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Provide products of one of the following:
- 1. B-Line.
 - 2. Kindorf.
 - 3. Unistrut.
 - 4. Or equal.

2.2 MATERIALS

- A. Strut, Fittings, and Accessories:
- 1. General
 - a. Unless otherwise shown or indicated, strut shall be 1-5/8 inches by 1-5/8 inches. Double struts shall be two pieces of the same strut, welded back-to-back at the factory.
 - b. Attachment holes, when required, shall be factory-punched on hole centers approximately equal to the cross-sectional width and shall be 9/16-inch diameter.
 - c. Fittings, braces, brackets, hardware, and accessories shall be Type 316 stainless steel.
 - d. Strut nuts shall be spring captured Type 316 stainless steel.
 - e. Square and round washers shall be Type 316 stainless steel.
 - 2. Strut materials shall be suitable for area classifications indicated in Section 26 05 05, General Provisions for Electrical Systems, and shown or indicated on the Drawings.
 - a. Dusty Locations:
 - 1) Strut shall be 12-gage carbon steel, hot-dip galvanized after fabrication, complying with ASTM A123/A123M.
 - b. Wet Locations:
 - 1) Strut shall be 12-gage Type 316 stainless steel.

- c. Corrosive Locations:
 - 1) Strut shall be 12-gage Type 316 stainless steel.
- B. Hanger Rods:
 - 1. Material:
 - a. Dry Locations: All-thread, zinc-coated.
 - b. Wet, Corrosive, or Hazardous Areas: Stainless steel.
 - 2. Size: Not less than 3/8-inch diameter, unless otherwise shown on the Drawings or specified.
- C. Beam Clamps for Attaching Threaded Rods or Bolts to Beam Flanges for Hanging Struts or Conduit Hangers:
 - 1. Beam clamps shall be stainless steel equipped with stainless steel square-head set screw, and shall include threaded hole sized for attaching the all-thread rod or threaded bolt.
- D. Miscellaneous Hardware:
 - 1. Bolts, screws, and washers shall be stainless steel.
 - 2. Hex Nuts: Shall be stainless steel and include nylon inserts.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine conditions under which the Work will be installed and notify ENGINEER in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. Provide hangers and supports for electrical systems with necessary channels, fittings, brackets, and related hardware for mounting and supporting materials and equipment. Provide anchor systems, concrete inserts, and associated hardware for proper support of electrical systems.
- B. Install equipment and devices on hangers and supports as shown on the Drawings, as specified, and as required.
- C. Install hangers and supports level, true, free of rack, and parallel and perpendicular to building walls and floors, so that the hangers and supports are installed in a neat, professional, workmanlike manner.

- D. Holes in suspended ceilings for rods for hangers and supports and other equipment shall be provided adjacent to bars, where possible, to facilitate removal of ceiling panels.
- E. Coordinate installation of hangers and supports with equipment, cabinets, consoles, panels, enclosures, boxes, conduit, cable tray, wireway, busway, cablebus, piping, ductwork, lighting fixtures, and other systems and equipment. Locate hangers and supports clear of interferences and access ways.
- F. Anchor Bolts, Expansion Anchors, and Concrete Inserts: Shall be in accordance with requirements of this Section.
- G. Mounting of Conduit:
 - 1. Provide space of not less than 1/4-inch between conduit surfaces and abutting or near surfaces except struts, cable trays, steel beams, and columns.
 - 2. Fasten conduit to struts, cable trays, steel beams, and columns using specified clamps and straps as shown, specified, and required.
 - 3. Devices shall be compatible with size of conduit and type of support. Following installation, size identification shall be visible and legible.
 - 4. Install conduit supports and fasteners in accordance with Section, 26 05 33.13, Rigid Conduits.
- H. Supports for Cabinets, Consoles, Panels, Enclosures, and Boxes:
 - 1. Wall-Mounted:
 - a. Provide space not less than 1/4-inch between cabinets, consoles, panels, enclosures, and boxes and the surface on which each is mounted. Provide non-metallic or stainless steel spacers as required.
 - b. Do not mount equipment, enclosures, panels, and boxes directly to beams or columns. Mount struts to beams or columns using beam clamps, and mount equipment, enclosures, panels, and boxes to the struts.
 - 2. Floor Stand Rack:
 - a. Where equipment, cabinets, consoles, panels, enclosures, and boxes cannot be wall-mounted, provide an independent floor stand rack.
 - b. Floor stand rack shall consist of struts, plates, brackets, connection fittings, braces, accessories, and hardware assembled in a rigid framework suitable for mounting of intended materials and equipment.
 - c. Equip floor stand racks with brackets and bases for rigidly-mounting the framework to the ceiling or floor, as applicable; or equip floor stand racks with beam clamps, angle plates, washers, and bolts for fastening to beam flanges, as applicable.
 - d. When equipment, cabinets, consoles, panels, enclosures, and boxes weigh more than 100 pounds:

- 1) Main vertical supports of floor stand rack assemblies shall be back-to-back struts.
 - 2) Bracing, clamping and anchoring of each floor stand rack shall be sufficient to ensure rigidity of the floor stand rack with the intended equipment, enclosures, conduit, cable tray, busway, cablebus, and wireway installed. Floor stand racks shall not be deflected more than 1/8-inch by a 100-pound force applied at any point on the floor stand rack in any direction.
- I. Drilling into beams or columns is not allowed unless authorized by ENGINEER.
- J. Tighten nuts and bolts to the manufacturer's recommended torque values.
- K. Field Cutting:
1. Cut edges of strut and hanger rod shall have rounded corners, edges beveled, and burrs removed. If field cutting the strut is required, use clean, sharp, dedicated tools. Remove oil, shavings, and other residue of cuttings prior to installation.

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SECTION 26 05 33.13

RIGID CONDUITS

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals shown, specified, and required to furnish and install conduit and fittings to form complete, coordinated and grounded raceway systems.
2. When specific, detailed conduit routings for various systems within buildings and other areas are not shown on the Drawings, CONTRACTOR shall establish routings based on single-line, riser, and interconnection diagrams and other information on the Drawings. CONTRACTOR shall provide for the proper installation of conduits in each system.
3. Conduit types and the installation methods shall comply with the following, unless otherwise shown or indicated in the Contract Documents:
 - a. Use aluminum conduit for exposed indoor conduit runs in non-corrosive areas.
 - b. Use rigid galvanized steel conduit for exposed exterior conduit runs in wet locations.

B. Coordination:

1. Conduit runs shown are diagrammatic. Coordinate conduit installation with piping, ductwork, light fixtures, and other systems and equipment and locate to avoid interferences.

C. Related Sections:

1. Section 26 05 29, Hangers and Supports for Electrical Systems.
2. Section 26 05 53, Identification for Electrical Systems.

1.2 REFERENCES

A. Standards referenced in this Section are:

1. ANSI C80.1, Standard for Rigid Electrical Steel Conduit (ERSC).
2. ANSI/NEMA FB1, Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing and Cable.
3. UL 6, Electrical Rigid Metal Conduit – Steel.
4. UL 514B, Conduit, Tubing, and Cable Fittings.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with the following:
 - 1. NEC Article 344, Rigid Metal Conduit.

1.4 SUBMITTALS

- A. Action Submittals: Submit the following:
 - 1. Shop Drawings:
 - a. Assembly details of conduit racks and other conduit support systems.
 - b. Layout drawings showing proposed routing of exposed conduits, conduits embedded in structural concrete, and conduits directly buried in the ground. Shop Drawings shall show locations of pull and junction boxes and penetrations in walls and floors. Shop Drawings of embedded conduits shall include cross-sections showing thickness of concrete slabs and locations of conduits relative to reinforcing steel, waterstops, and other features of the slab.
 - 2. Product Data:
 - a. Manufacturer's catalog cuts and product data for conduit, fittings, and appurtenances.
- B. Informational Submittals: Submit the following:
 - 1. Manufacturer's Instructions:
 - a. When requested by ENGINEER, provide copies of manufacturer's recommendations for handling and installing products.
 - 2. Site Quality Control Submittals:
 - a. When requested by ENGINEER, provide copies of results of specified Site quality control testing.
- C. Closeout Submittals: Submit the following:
 - 1. Record Drawings:
 - a. Show actual routing of exposed and concealed conduit runs in record documents in accordance with Section 01 78 39, Project Record Documents.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Rigid Steel Conduit, Elbows, and Couplings:
 - 1. Manufacturers: Provide products of one of the following:
 - a. Allied Tube and Conduit.

- b. Wheatland Tube Company.
 - c. Western Tube and Conduit Corporation.
 - d. Or equal.
 2. Material: Rigid, heavy-wall, mild steel, hot-dip galvanized, smooth interior, tapered threads and carefully reamed ends; 3/4-inch NPS minimum size.
- B. Aluminum Conduit, Elbows, and Couplings:
 1. Manufacturers: Provide products of one of the following:
 - a. Allied Tube and Conduit.
 - b. Wheatland Tube Company.
 - c. Or equal.
 2. Material: Rigid, heavy-wall aluminum, smooth interior, tapered threads and carefully reamed ends; 3/4-inch NPS minimum size.
- C. Metallic Conduit Fittings, and Outlet Bodies:
 1. Manufacturers: Provide products of one of the following:
 - a. Crouse-Hinds Company.
 - b. Appleton Electric Company.
 - c. Or equal.
 2. Material and Construction: Cast gray iron alloy, cast malleable iron or aluminum bodies and covers consistent with conduit material. Units shall be threaded type with five full threads. Materials shall comply with ANSI/NEMA FB1 and be listed by UL. Do not use "LB" fittings. Use type "LBD" fittings where use of fittings is unavoidable.
 3. Use: Conduits shall be gasketed and watertight in hazardous, wet, and corrosive locations.
- D. Conduit Hubs:
 1. Manufacturers: Provide products one of the following.
 - a. Myers Electrical Products Company.
 - b. Or equal.
 2. Material: Threaded conduit hub, vibration-proof, weatherproof, with captive O-ring seal, zinc metal with insulated throat and bonding screw.
 3. Use: Provide for all conduit terminations to boxes, cabinets, and other enclosures in areas designated as wet locations.
- E. Conduit Bushings and Locknuts:
 1. Manufacturers: Provide products one of the following:
 - a. O-Z/Gedney.
 - b. Appleton Electric Company.
 - c. Or equal.

2. Insulated Bushings: Malleable iron body with plastic liner. Threaded type with steel clamping screw. Provide with bronze grounding lug, as required.
3. Locknuts: Steel for sizes 3/4-inch through two-inch diameter and malleable iron for sizes 2.5-inch through four-inch diameter.
4. Use: Provide for all conduit terminations to boxes, cabinets and other enclosures except threaded type in areas designated as dusty locations.

2.2 ACCESSORIES

- A. Fasteners: To the extent possible, fastener material shall be consistent with conduit material. Fasten raceway systems to supporting structures using the following:
 1. To Wood: Wood screws.
 2. To Brick Masonry: Expansion bolts by Price, or equal.
 3. To Steel: Beam clamps in accordance with Section 26 05 29, Hangers and Supports for Electrical Systems.
- B. Duct Sealing Compound
 1. Soft, fibrous, slightly tacky, non-hardening sealing compound.
 2. Remains workable at all temperatures.
 3. Manufacturer:
 - a. Type DUX by O-Z/Gedney.
 - b. Or equal.

2.3 IDENTIFICATION

- A. Conduit Labels:
 1. Provide conduit labels in accordance with Section 26 05 53, Identification for Electrical Systems.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine conditions under which the Work will be performed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. Install in accordance with Laws and Regulations.

- B. Supports:
1. Rigidly support conduits by clamps, hangers, or Unistrut-type channels. Conduit supports and accessories shall be in accordance with Section 26 05 29, Hangers and Supports for Electrical Systems.
 2. Support single conduits by means of one-hole pipe clamps in combination with one-screw back plates, to raise conduits from the support surface. Support multiple runs of conduits on trapeze type hangers.
- C. Fastenings: Fasten raceway systems rigidly and neatly to supporting structures using specified materials.
- D. Exposed Conduit:
1. Install parallel or perpendicular to structural members or walls.
 2. Where possible, run in groups. Provide conduit racks of suitable width, length, and height, arranged to suit field conditions. Provide support every ten feet, minimum.
 3. Install on structural members in protected locations.
 4. Locate clear of interferences.
 5. Provide six inches of clearance from hot fluid lines and 1/4-inch from walls.
 6. Install vertical runs plumb. Unsecured drop length shall not exceed 12 feet.
- E. Empty or Abandoned in Place Conduits:
1. Install nylon pull wire in each empty conduit and cap conduits not terminating in boxes with permanent fittings designed for the purpose.
- F. Field Bends: No indentations. Diameter of conduit shall not vary more than 15 percent at bends.
- G. Joints:
1. Apply conductive compound to joints before assembly.
 2. Make up joints tight and ground thoroughly.
 3. Use standard tapered pipe threads for conduit and fittings.
 4. Cut conduit ends square and ream to prevent damaging wire and cable.
 5. Use full threaded couplings. Split couplings are not allowed.
 6. Use strap wrenches and vises to install conduit. Replace conduit with wrench marks.
 7. Apply zinc-rich paint to exposed threads and other areas of galvanized conduit system where base metal is exposed.
- H. Terminations:
1. Install insulated bushings on conduits entering boxes or cabinets, except when threaded hubs are used.
 2. Provide locknuts on both inside and outside of enclosure, except when threaded hubs are used.

3. Use of bushings in lieu of locknuts is not allowed.
 4. Install conduit hubs on conduits entering boxes or cabinets in wet and corrosive areas.
- I. Moisture Protection:
1. Plug or cap conduit ends at time of installation to prevent entrance of moisture and foreign materials.
 2. Drainage: Conduit runs shall be fully drainable. Where possible install conduit runs to drain to one end and away from building. Avoid pockets or depressions in conduit runs.
 3. Seal conduit openings within control and instrumentation panels and distribution equipment with duct sealing compound to provide watertight seal.
- J. Corrosion Protection:
1. Conduit Curb:
 - a. For existing conduits routed in concrete slabs or floors and stub-ups through floor, provide concrete curb as detailed in the structural drawings. For floor-mounted equipment, concrete equipment base shall be in lieu of concrete curb.
 2. Dissimilar Metals:
 - a. Prevent occurrence of electrolytic action between dissimilar metals.
 - b. Do not use copper products in connection with aluminum, and do not use aluminum in locations subject to drainage of copper compounds on bare aluminum.
 - c. Back paint aluminum in contact with masonry or concrete with two coats of aluminum-pigmented bituminous paint.
- K. Reused Existing Conduits:
1. Pull rag swab through conduits to remove water and to clean conduit prior to installing new cable.
 2. Repeat swabbing until all foreign material is removed.
 3. Pull mandrel through conduit, if necessary, to remove obstructions.
- L. Identify conduits, including spares, in accordance with Section 26 05 53, Identification for Electrical Systems.

3.3 FIELD QUALITY CONTROL

- A. Site Tests:
1. Test conduits by pulling through each conduit a cylindrical mandrel with length not less than two pipe inside diameters, having an outside diameter equal to 90 percent of conduit's inside diameter.

2. Maintain a record, by number, of all conduits successfully tested.
3. Repair or replace conduits that do not successfully pass testing, and re-test.

+ + END OF SECTION + +

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SECTION 26 05 33.16

FLEXIBLE CONDUITS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
 - 1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals shown, specified, and required to furnish and install flexible metallic conduit and fittings.

1.2 REFERENCES

- A. Standards referenced in this Section are:
 - 1. UL 360, Liquid-Tight Flexible Steel Conduit.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with the following:
 - 1. NEC Article 350, Liquid-Tight Flexible Metal Conduit.

1.4 SUBMITTALS

- A. Action Submittals: Submit the following:
 - 1. Product Data:
 - a. Manufacturer's literature and technical information for flexible conduit and fittings proposed for use.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Flexible Conduit (Non-hazardous Areas and Class 1, Division 2, Hazardous Areas):
 - 1. Material: Flexible galvanized steel core with smooth, abrasion-resistant, liquid-tight, polyvinyl chloride cover. Continuous copper ground built in for sizes 3/4-inch through 1.25-inch. Material shall be UL-listed.

2. Products and Manufacturers: Provide one of the following:
 - a. Anaconda Sealtite Type UA by Anamet Electrical, Inc.
 - b. Liqueflex Type L.A. by Electric-Flex Company.
 - c. Or equal.

- B. Flexible Conduit Fittings:
 1. Material and Construction: Malleable iron with cadmium finish. Fittings shall adapt the conduit to standard threaded connections, shall have an inside diameter not less than that of the corresponding standard conduit size and shall be UL listed.
 2. Manufacturers: Provide products of one of the following:
 - a. Crouse-Hinds Company.
 - b. Appleton Electric Company.
 - c. Or equal.
 3. Use: Provide on flexible conduit in non-hazardous areas.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine conditions under which the Work will be installed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. Install at motors, transformers, field instruments, and equipment subject to vibration or require movement for maintenance purposes. Provide necessary reducer where equipment furnished cannot accept 3/4-inch diameter flexible conduit. Limit flexible conduit length to three feet maximum.

- B. Install in conformance with the Laws and Regulations.

+ + END OF SECTION + +

SECTION 26 05 33.33

PULL, JUNCTION, AND TERMINAL BOXES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
 - 1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install pull, junction, and terminal boxes.
- B. Related Sections:
 - 1. Section 26 05 05, General Provisions for Electrical Systems.
 - 2. Section 26 05 29, Hangers and Supports for Electrical Systems.
 - 3. Section 26 05 53, Identification for Electrical Systems.

1.2 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. NEC Article 314, Outlet, Device, Pull and Junction Boxes; Conduit Bodies; Fittings; and Handhole Enclosures.

1.3 SUBMITTALS

- A. Action Submittals: Submit the following:
 - 1. Product Data:
 - a. Manufacturer's technical information for pull, junction, and terminal boxes proposed for use.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Pull, Junction, and Terminal Boxes:
 - 1. General – Applicable to All Boxes:
 - a. Description and Performance Criteria:

- 1) Provide pull, junction, and terminal boxes rated at not less than NEMA 12. Boxes shall be appropriate for each location in accordance with NEMA requirements and as required for area classifications specified in Section 26 05 05, General Provisions for Electrical Systems.
 - b. Manufacturers: Provide products of one of the following:
 - 1) Appleton Electric Company.
 - 2) Crouse-Hinds Company.
 - 3) Hoffman Engineering Company.
 - 4) Or equal.
 - c. Terminal strips and terminal blocks in terminal boxes shall be mounted on terminal box sub-panels.
 - d. Identification: Boxes shall be identified in accordance with Section 26 05 53, Identification for Electrical Systems.
2. Materials and Construction – Dusty Locations:
 - a. Material: Welded and galvanized sheet steel of USS gage.
 - b. Gasket: Oil-resistant gasket.
 - c. Access: Lift-off hinges and quick-release latches.
 - d. Material Thickness:
 - 1) Boxes with dimension two feet and smaller shall be 14-gage.
 - 2) Boxes with dimension between two and three feet shall be 12 gage.
 - 3) Boxes with dimension of three feet or more in any direction shall be 10-gage.
 3. Materials and Construction - Wet or Corrosive Locations:
 - a. Rating:
 - 1) Pull boxes in wet, corrosive, or outdoor areas shall be NEMA 4X.
 - b. Material:
 - 1) Cast gray iron alloy with hot-dip galvanized finish, or cast malleable iron bodies and covers.
 - 2) Large boxes not generally available in cast iron construction shall be copper-free aluminum alloy or Type 316 stainless steel, as required by location.
 - 3) In wet or corrosive locations boxes shall be Type 316 stainless steel.
 - c. Gasket:
 - 1) Provide neoprene gaskets for wet and corrosive locations.
 - 2) Gaskets shall be an approved type designed for the purpose. Improvised gaskets are not acceptable.
 - d. Access: Stainless steel cover bolts.
 - e. Features:
 - 1) External mounting lugs.
 - 2) Drilled and tapped conduit holes.
 - 3) Boxes where conduits enter building or structure below grade shall have 1/4-inch drain hole at bottom of the box.
 - 4) Provide threaded connections for explosion proof boxes.

- B. Terminal Blocks:
1. Products and Manufacturers: Provide one of the following:
 - a. Allen-Bradley Company, Bulletin, Model 1492.
 - b. General Electric Company, Model CR151K.
 - c. Or equal.
 2. Material and Construction:
 - a. NEMA-rated nylon modular terminal blocks.
 - b. 600-volt rated.
 - c. Control and alarm circuit terminals shall be screwed type with permanently affixed numeric identifiers beside each connection.
 - d. Power terminals shall be copper and rated for the circuit ampacity.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine conditions under which the Work will be installed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. Mount boxes so that sufficient access and working space is provided and maintain clearance of not less than 1/4-inch from walls.
- B. Securely fasten boxes to walls or other structural surfaces on which boxes are mounted. Provide independent supports that comply with Section 26 05 29, Hangers and Supports for Electrical Systems, where boxes will not be mounted on walls or other structural surface.
- C. Install pull boxes where shown or indicated, and provide pull boxes where one or more of the following conditions exist:
 1. Conduit runs containing more than three 90-degree bends.
 2. Conduit runs exceeding 200 feet in length.
- D. Provide removable, flame-retardant, insulating cable supports in boxes with any dimension exceeding three feet.
- E. Size junction, pull, and terminal boxes in accordance with NEC Article 314 and other Laws and Regulations.

- F. Provide terminal blocks in boxes where shown and where cable terminations or splices are required.

+ + END OF SECTION + +

SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals shown, specified, and required to furnish and install identification for electrical apparatus and electrical Work.

B. Related Sections:

1. Section 26 05 19, Low Voltage Electrical Power Conductors and Cables.
2. Section 26 05 33.13, Rigid Conduits.
3. Section 26 05 33.33, Pull, Junction, and Terminal Boxes.
4. Section 26 28 16.33, Disconnect Switches.
5. Section 40 60 05, Instrumentation and Control for Process Systems.

1.2 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with the following:

1. NEC Article 110, Requirements for Electrical Installation.
2. NEC Article 210, Branch Circuits.
3. NEC Article 215, Feeders.
4. NFPA 70E, Electrical Safety in the Workplace.

1.3 SUBMITTALS

A. Action Submittals: Submit the following:

1. Shop Drawings: Submit the following:
 - a. Complete description and listing of proposed electrical identification and electrical identification devices for associated equipment or systems.
 - b. Conduit and wire identification numbering system and equipment signage.
2. Product Data:
 - a. Manufacturer's literature, cut sheets, specifications, dimensions and technical data for all products proposed under this Section.

PART 2 – PRODUCTS

2.1 MANUFACTURED UNITS

- A. Engraved Identification Devices (Nameplates and Legend Plates):
1. Nameplates:
 - a. Laminated thermoset plastic, 1/16-inch thick, engraved condensed block black lettering on white background, square corners, and beveled front edges, or match existing.
 - b. Size: As required.
 - c. Letter Size: Minimum 3/16-inch.
 - d. Nameplates one-inch or less in height shall have one mounting hole at each end. Nameplates greater than one-inch in height shall have mounting holes in the four corners.
 2. Legend Plates:
 - a. Legend plates for pushbuttons, pilot lights, selector switches, and other panel-mounted devices shall be large size with dimensions of approximately 2-7/16 inches wide by 2-13/32 inches tall (Allen Bradley large automotive size), plastic, custom engraved with black letters on white background.
 - 1) Provide standard-size legend plates where devices are mounted on motor control centers and spacing of devices precludes using automotive-size legend plates.
 - b. Lettering size and line weight shall be the same for all legend plates on the same panel or enclosure. Maximum size shall be 1/4-inch and minimum size shall be 1/8-inch.
- B. Conduit Labels:
1. Products and Manufacturers: Provide one of the following:
 - a. B-915-xxxxx by Brady.
 - b. Or equal.
 2. Shall be pre-tensioned acrylic/vinyl construction coiled to completely encircle conduit for conduit up through five-inch diameter, or pre-molded to conform to circumference of conduit six-inch diameter and larger.
 3. Attach strap-on style for six-inch diameter conduit with stainless steel springs.
 4. Shall be blank for use with custom printed labels.
 5. Custom Labels:
 - a. Shall have black lettering on yellow background.
 - b. Shall not contain abbreviations in legend.
 - c. Shall be custom printed on continuous tape with permanent adhesive using thermal printer specified below.
- C. Wire Identification:
1. Heat Shrinkable Wire and Cable Labeling System:

- a. Products and Manufacturers: Provide one of the following:
 - 1) B-341 PS-xxx-2W by Brady.
 - 2) Or equal.
- b. White heat-shrinkable irradiated polyolefin shrink-on sleeves. Labels shall be thermal printed. Labels shall be not less than two inches wide.
- 2. Wrap-Around Wire and Cable Labeling System:
 - a. Products and Manufacturers: Provide one of the following:
 - 1) THT-XX-427 by Brady.
 - 2) Or equal.
 - b. Self-laminating white/transparent self extinguishing vinyl strips. Length shall be sufficient to provide at least 2.5 wraps. Labels shall be thermally printed and not less than two inches wide.
- D. Thermal Printing System:
 - 1. Utilize thermal transfer process to provide non-smearing labels and markers.
 - 2. Wire and Cable Markers:
 - a. Portable, Products and Manufacturers: Provide one of the following:
 - 1) TLS2200 by Brady.
 - 2) Or equal.
 - b. Desktop, Products and Manufacturers: Provide one of the following:
 - 1) 200M by Brady.
 - 2) Or equal.
 - 3. Cable Markers:
 - a. Portable, Products and Manufacturers: Provide one of the following:
 - 1) Handimark by Brady.
 - 2) Or equal.
 - b. Desktop, Products and Manufacturers: Provide one of the following:
 - 1) Labelizer PLUS by Brady.
 - 2) Or equal.

2.2 FABRICATION

- A. Engraved Identification Devices (Nameplates and Legend Plates):
 - 1. Nameplate and legend plate text is preliminary and subject to change pending final review and approval of nomenclature by ENGINEER after start-up and testing.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Provide electrical identification in accordance with manufacturer recommendations and as required for proper identification of equipment and materials.

- B. Engraved Identification Devices (Nameplates and Legend Plates):
1. Unless otherwise indicated in the Contract Documents, attach permanent nameplates with permanent adhesive and with 3/16-inch diameter, round head, stainless steel machine screws into drilled and tapped holes.
 2. Provide nameplate with 1.5-inch high letters to identify each console, cabinet, panel, or enclosure as shown or indicated.
 3. Provide nameplates for field-mounted motor starters, disconnect switches, manual starter switches, pushbutton stations, and similar equipment operating components, which shall describe motor or equipment function and circuit number.
 4. Provide nameplates with 1/2-inch high letters to identify each junction and terminal box shown or indicated.
 5. Interiors of Cabinets, Consoles, Panels, Terminal Boxes, and Other Enclosures:
 - a. Provide nameplates for identification.
 - b. Provide each item inside cabinet, console, panel, terminal box, or enclosure with laminated plastic nameplate as shown on approved Shop Drawings and CONTRACTOR's other submittals. Install nameplates with adhesive.
 - c. Interior items requiring nameplates include:
 - 1) Terminal blocks and strips.
 - 2) Bus bars.
 - 3) Relays.
 - 4) Rear of face-mounted items.
 - 5) Rear of door-mounted items.
 - 6) Interior mounted items that require identification when mounted externally.
 - d. Circuit Breaker Directory:
 - 1) Provide engraved laminated plastic directory listing function and load controlled for each circuit breaker within panel used for power distribution.
 6. Re-label existing equipment whose designation have changed.
- C. Conduit Labels:
1. Provide conduits with conduit labels unless otherwise shown or indicated.
 2. Do not label flexible conduit.
 3. Do not label exposed single conduit runs of less than 25 feet between local disconnect switches and their associated equipment.
 4. Conduit labels shall indicate the following information:
 - a. Conduit Number: Alphanumeric as shown on the Drawings, as assigned by CONTRACTOR for unlabelled conduits, and in accordance with approved submittals.
 6. Provide conduit labels at the following locations:
 - a. Where each conduit enters and exits walls, ceilings, floors, or slabs.

- b. Where conduit enters or exits boxes, cabinets, consoles, panels, or enclosures, except pull boxes and conduit bodies used for pull boxes.
 - c. At maximum intervals of 50 feet along length of conduit.
 - 7. Orient conduit labels to be readable.

- G. Wire and Cable Identification:
 - 1. Color-coding of insulated conductors shall comply with Section 26 05 19, Low Voltage Electrical Power Conductors and Cables.
 - 2. Use heat-shrinkable wire labels where wire or cable is terminated. Use wrap-around labels where wire or cable is to be labeled but is not terminated.
 - 3. Do not provide labels for the following:
 - a. Bare (uninsulated) conductors, unless otherwise shown or indicated as labeled.
 - 4. Provide wire and cable labels for the following:
 - a. New, rerouted, or revised wire or cable.
 - b. Insulated conductors.
 - c. Wire and cable terminations:
 - 1) Wire labels shall be applied between 1/2-inch and one inch of completed termination.
 - 2) Apply cable labels between 1/2-inch and one inch of cable breakout into individual conductors.
 - a) Label individual conductors in a cable after breakout as specified for wires.
 - d. Wire or cable exiting cabinets, consoles, panels, terminal boxes, and enclosures:
 - 1) Label wires or cables within two inches of entrance to conduit.
 - e. Wire or cable in junction boxes and pull boxes:
 - 1) Label wires or cables within two inches of entrance to conduit.
 - f. Wire and cable installed in cable tray:
 - 1) Wire and cable shall have labels at maximum intervals of 20 feet.
 - g. Wire and cable installed without termination in electrical manholes:
 - 1) Wire and cable shall have wrap-around labels applied within one foot of exiting manhole.
 - 5. Wire and Cable Identification System:
 - a. Wire and cable labels shall be imprinted with an identifying designator.
 - 1) Wire and cable extending between two devices or items and that does not undergo a change of function shall be identified by a single unique designator as specified below.
 - b. Field Wiring:
 - 1) Wire or cable designator shall consist of:
 - a) Remaining characters shall be alphanumeric and make wire designator unique.

- b) Numbering shall reflect actual designations used in the Work and shall be documented in record documents.
 - c. Cabinet, Console, Panel, and Enclosure Wiring, Internal:
 - 1) New Cabinets, Consoles, Panels, and Enclosures:
 - a) Wire and cable inside cabinets, consoles, panels, and enclosures shall have designators as specified in Section 40 60 05, Instrumentation and Control for Process Systems.
 - 6. Modified Cabinets, Consoles, Panels, and Enclosures:
 - a. New or rerouted wire or cable in existing cabinets, consoles, panels, and enclosures shall be labeled as shown on the Drawings or be assigned a ten-character designator equivalent to field wire designator.
- H. Terminal Strip Labeling:
 - 1. Label panel side of terminal to match panel wire number.
 - 2. Label field side of terminal to match field wire number. Terminal number shall not include the Contract number.

+ + END OF SECTION + +

SECTION 26 28 16.33

DISCONNECT SWITCHES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
 - 1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install disconnect switches.
- B. Related Sections:
 - 1. Section 26 05 05, General Provisions for Electrical Systems.
 - 2. Section 26 05 53, Identification for Electrical Systems.

1.2 REFERENCES

- A. Standards referenced in this Section are:
 - 1. UL 98, Enclosed and Dead-Front Switches.
 - 2. NEMA KS 1, Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
 - 3. NEMA 250, Enclosures for Electrical Equipment (1000 Volts Maximum).

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. NEC Article 404, Switches.
 - 2. Disconnect switches shall bear the UL label.

1.4 SUBMITTALS

- A. Action Submittals: Submit the following:
 - 1. Shop Drawings:
 - a. Listing of each switch to be furnished, including location, rating, and NEMA enclosure type for each.
 - 2. Product Data:
 - a. Manufacturer's technical information for disconnect switches proposed for use.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Provide products of one of the following:
 - 1. Square-D Company.
 - 2. Cutler-Hammer.
 - 3. General Electric Company.
 - 4. Siemens.
 - 5. Or equal.

2.2 MATERIALS

- A. Single Throw, Circuit Disconnect Switches:
 - 1. Type: Fused or unfused, horsepower rated, heavy-duty, single throw, quick-make, quick-break mechanism, visible blades in the "OFF" position and safety handle.
 - 2. Rating: Voltage and current ratings and number of poles as required for motor or equipment circuits being disconnected. Switches shall bear a UL label and shall comply with the requirements of UL 98, NEMA KS 1 and NEMA 250.
 - 3. Provide auxiliary dry contacts to indicate switch position.
- B. Enclosures: NEMA rating shall be as required for area classifications specified in Section 26 05 05, General Provisions for Electrical Systems.
- C. Identification:
 - 1. Identify enclosures in accordance with Section 26 05 53, Identification for Electrical Systems.
 - 2. Provide nameplate to identify the equipment served by disconnect switch and associated source of power.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine conditions under which the Work will be installed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. Install equipment so that sufficient access and working space is provided for ready and safe operation and maintenance.
- B. Securely fasten equipment to walls or other structural supports on which they are mounted. Provide independent stainless steel supports where no wall or other structural surface exists. Mount disconnect enclosures at a height not exceeding six feet.
- C. Provide suitable 1/4-inch spacers to prevent mounting enclosure directly against walls.

++ END OF SECTION ++

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SECTION 40 05 05

EXPOSED PIPING INSTALLATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified, and required to install and test all exposed piping, fittings, and specials. The Work includes the following:
 - a. All types and sizes of exposed piping, except where exposed piping installations are specified under other Sections.
 - b. Unless otherwise shown or specified, this Section includes all piping beginning at the outside face of structures or structure foundations and extending into the structure. Piping embedded in concrete within a structure or foundation shall be considered as exposed and is included herein. Piping that is permanently or intermittently submerged, or installed in sub-aqueous environments, is considered as exposed and is included in this Section.
 - c. Installation of all jointing and gasket materials, specials, flexible couplings, mechanical couplings, harnessed and flanged adapters, sleeves, tie rods, and all Work required for a complete exposed piping installation.
 - d. Supports, restraints, and other anchors.
 - e. Field quality control, including testing.
 - f. Cleaning and disinfecting.
 - g. Incorporation of valves, meters, and special items shown or specified into the piping systems per the Contract Documents and as required.

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate installation of items that must be installed with or before exposed piping Work.
2. Coordinate with appropriate piping Sections of Division 40, Mechanical.

C. Related Sections:

1. Section 40 05 19, Ductile Iron Process Pipe.

1.2 REFERENCES

A. Standards referenced in this Section are:

1. ANSI B16.1, Cast Iron Pipe Flanges and Flanged Fittings.
2. ASME Boiler and Pressure Vessel Code.
3. ASME B31.3, Process Piping.

4. American Society for Non-Destructive Testing (ASNT), ASNT-TC-1A, Recommended Practice, Personnel Qualification, and Certification in Non-destructive Testing.
5. ASTM A380, Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.
6. ASTM D4161, Standard Specification for Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe Joints Using Flexible Elastomeric Seals.
7. AWS D1.1/D1.1M, Structural Welding Code-Steel.
8. ANSI/AWWA C111, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
9. ANSI/AWWA C206, Field Welding of Steel Water Pipe.
10. ASTM F2164, Standard Practice for Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Hydrostatic Pressure.
11. ANSI/AWWA C600, Installation of Ductile Iron Water Mains and Their Appurtenances.
12. ANSI/AWWA C606, Grooved and Shouldered Joints.
13. ANSI/AWWA C651, Disinfecting Water Mains.
14. AWWA M11, Steel Pipe - A Guide for Design and Installation.
15. AWWA M23, PVC Piping - Design and Installation.
16. AWWA M41, Ductile-Iron Pipe and Fittings.
17. AWWA M45, Fiberglass Pipe Design.
18. AWWA M55, PE Pipe - Design and Installation.

1.3 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with requirements and recommendations of authorities having jurisdiction over the Work.

1.4 SUBMITTALS

A. Action Submittals: Submit the following:

1. Shop Drawings:
 - a. Detailed drawings in plan and, as applicable, section.
 - b. Details of piping, valves, supports, accessories, specials, joints, harnessing, and main anchor supports, and connections to existing piping, structures, equipment, and appurtenances.
2. Testing Plans, Procedures, and Testing Limitations:
 - a. Submit description of proposed testing methods, procedures, and apparatus, and obtain ENGINEER's approval prior to testing.

B. Informational Submittals: Submit the following:

1. Certificates:
 - a. Submit a certificate, signed by manufacturer of each product, certifying that product complies with applicable referenced standards.

2. Source Quality Control Submittals:
 - a. Submit copies of testing report for each test.
 3. Site Quality Control Reports:
 - a. Submit copies of testing report for each test.
- C. Closeout Submittals: Submit the following:
1. Record Documentation:
 - a. Maintain accurate and up-to-date record documents showing field and Shop Drawing modifications. Record documents for exposed piping Work shall show actual location of all piping and appurtenances on a copy of the Drawings, unless otherwise approved by ENGINEER.
 - b. Record documents shall show piping with elevations referenced to the project datum and dimensions from permanent structures. For straight runs of pipe provide offset dimensions as required to document pipe location.
 - c. Include section drawings with exposed piping record documents when the Contract Documents include section Drawings.
 - d. Conform to Section 01 78 39, Project Record Documents.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Delivery:
1. Deliver products to Site to ensure uninterrupted progress of the Work.
 2. Upon delivery, inspect pipe and appurtenances for cracked, gouged, chipped, dented, and other damage and immediately remove damaged products from Site.
 3. Conform to requirements of Section 01 65 00, Product Delivery Requirements.
- B. Storage:
1. Store products for convenient access for inspection and identification. Store products off the ground using pallets, platforms, or other supports. Protect packaged products from corrosion and deterioration.
 2. Pipe and fittings other than thermoplastic materials may be stored outdoors without cover. Thermoplastic pipe and fittings stored outdoors shall be covered.
 3. Conform to requirements of Section 01 66 00, Product Storage and Handling Requirements.
- C. Handling:
1. Handle pipe, fittings, specials, and accessories carefully with approved handling devices. Do not drop or roll material off delivery vehicles. Do not otherwise drop, roll, or skid piping.
 2. Avoid unnecessary handling of pipe.
 3. Keep pipe interiors free of dirt and foreign matter.

4. Protect interior linings and exterior coatings of pipe and fittings from damage. Replace pipe and fittings with damaged lining regardless of cause of damage. Repair damaged coatings.
5. Conform to requirements of Section 01 65 00, Product Delivery Requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Piping materials are specified in the Exposed Piping Schedule at the end of this Section. Piping materials shall conform to Specification for each type of pipe and piping appurtenances in applicable sections of Division 40, Process Integration.
- B. Markings and Identification:
 1. Pipe Markings:
 - a. Clearly mark each piece of pipe or fitting with a designation conforming to that shown on the approved Shop Drawings.
 - b. Manufacturer shall cast or paint on each length of pipe and each fitting the pipe material, diameter, and pressure or thickness class.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine conditions under which the Work is to be installed and notify ENGINEER in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General:
 1. Install piping as shown, specified and as recommended by the pipe and fittings manufacturer.
 2. If there is a conflict between manufacturer's recommendations and the Contract Documents, request in writing instructions from ENGINEER before proceeding.
 3. Provide pipe manufacturer's installation specialist at Site as specified on this Section.
- B. Temporary Blind Flanges, Plugs, Caps, and Bulkheads:
 1. Temporarily plug installed pipe at the end of each day of work or other interruption of pipe installation to prevent entry of animals, liquids, and persons into pipe, and entrance or insertion of deleterious materials into pipe.

2. Install standard plugs in all bells at dead ends, tees, and crosses. Cap all spigot and plain ends.
3. Fully secure and block blind flanges, plugs, caps, and bulkheads installed for testing, designed to withstand specified test pressure.
4. Where plugging is required for phasing of Work or subsequent connection of piping, install watertight, permanent type blind flanges, plugs, caps, or bulkhead acceptable to ENGINEER.

C. Piping Installation:

1. Conform to manufacturer's instructions and requirements of standards and manuals listed in this Section, as applicable:
 - a. Steel Pipe: ASME B31.3, ANSI/AWWA C206, AWWA M11.
 - b. Thermoplastic Pipe: AWWA M23.
2. Install straight runs true to line and elevation.
3. Install vertical pipe truly plumb in all directions.
4. Install piping parallel or perpendicular to walls of structures. Piping at angles and 45 degree runs across corners of structures will not be accepted unless specifically shown on the Contract Documents or approved by the ENGINEER.
5. Install small diameter piping generally as shown when specific locations and elevations are not indicated. Locate such piping as required to avoid ducts, equipment, beams, and other obstructions.
6. Install piping to leave all corridors, walkways, work areas, and similar spaces unobstructed. Unless otherwise shown on the Contractor Documents or approved by ENGINEER, provide a minimum headroom clearance under piping and pipe supports of 7.5 feet. Clearances beneath piping shall be measured from the outermost edge of piping, flanges or other type of joint that extends beyond the nominal outside diameter of piping.
7. Protect and keep clean interiors, fittings, and valves of pipe that will convey potable water, chemicals, and other pipe designated by ENGINEER.
8. Cutting: Cut pipe from measurements verified at Site. Field cut pipe, where required, with a machine specially designed for cutting type of pipe being installed. Make cuts carefully without damage to pipe, coating, or lining, and with a smooth end at right angles to axis of pipe. Do not flame-cut pipe.
9. Place bell and spigot-type pipe so that bells face the direction of laying, unless otherwise approved by ENGINEER.
10. Deflections at joints shall not exceed 75 percent of amount allowed by pipe manufacturer, unless otherwise approved by the ENGINEER.

D. Jointing Pipe:

1. General:
 - a. Make joints in accordance with pipe manufacturer's recommendations and Contract Documents.
 - b. Cut piping accurately and squarely and install without forcing or springing.

- c. Ream out pipes and tubing to full inside diameter after cutting. Remove all sharp edges on end cuts.
 - d. Remove all cuttings and foreign matter from inside of pipe and tubing before installation. Thoroughly clean all pipe, fittings, valves, specials, and accessories before installing.
- E. Installing Valves and Accessories:
- 1. Provide supports for large valves, flow meters, and other heavy items as shown or required to prevent strain on adjoining piping.
 - 2. Position valves so that they do not conflict with upstream and downstream elements of the piping system.
- F. Unions:
- 1. Provide a union downstream of each valve with screwed connections.
 - 2. Provide screwed or flanged unions at each piece of equipment, where shown, and where necessary to install or dismantle piping.
- G. Transitions from One Type of Pipe to Another:
- 1. Provide all necessary adapters, specials, and connection pieces required when connecting different types and sizes of pipe or connecting pipe made by different manufacturers.
- H. Closures:
- 1. Provide closure pieces, such as blind flanges and caps, shown or required to complete the Work.

3.3 THRUST RESTRAINT

- A. Provide thrust restraint on all pressure piping systems and where otherwise shown or specified.
- B. Thrust restraints shall be designed for axial thrust exerted by test pressure specified in the Exposed Piping Schedule at end of this Section.

3.4 WORK AFFECTING EXISTING PIPING

- A. Location of Existing Piping:
 - 1. Locations of existing piping shown on Drawings is approximate.
 - 2. Determine the true location of existing piping to which connections are to be made, crossed, and that could be disturbed, and determine location of other facilities that could be affected by the Work.
- B. Taking Existing Pipelines Out of Service:
 - 1. Conform to Section 01 14 16, Coordination with Owner's Operations.

- C. Work on Existing Pipelines:
 - 1. Cut or tap pipes as shown or required with machines and tools specifically designed for cutting or tapping pipelines.
 - 2. Install temporary plugs to prevent entry of mud, dirt, water, and debris into pipe.
 - 3. Provide necessary adapters, sleeves, fittings, pipe, and appurtenances required to complete the Work.
 - 4. Conform to applicable requirements of Section 01 14 16, Coordination with Owner's Operations.

3.5 PAINTING

- A. Conform to applicable requirements of Section 09 91 00, Painting.

3.6 FIELD QUALITY CONTROL

- A. Installation Specialist:
 - 1. Provide services of a competent installation specialist of the pipe when pipe installation commences for:
 - a. Thermoplastic pipe.
 - 2. Retain installation specialist at Site for a minimum of 2 days (eight hours per day at the Site) or until competency of the pipe installation crew has been satisfactorily demonstrated to ENGINEER.
- B. Testing, General:
 - 1. Test all piping, except as exempted in the Exposed Piping Schedule.
 - 2. Notification:
 - a. Notify ENGINEER at least 48 hours prior to testing.
 - b. When authorities having jurisdiction are to witness tests, notify ENGINEER and authorities having jurisdiction in writing at least 48 hours in advance of testing.
 - 3. Conduct all tests in presence of ENGINEER.
 - 4. Remove or protect pipeline-mounted devices that could be damaged by testing.
 - 5. Provide all apparatus and services required for testing, including:
 - a. Test pumps, compressors, hoses, calibrated gages, meters, test containers, valves, fittings, and temporary pumping systems required.
 - b. Temporary bulkheads, bracing, blocking, and thrust restraints.
 - 6. Provide air if an air test is required, and power if pumping is required.
 - 7. Unless otherwise specified, OWNER will provide fluid required for hydrostatic testing. CONTRACTOR shall provide means to convey fluid for hydrostatic testing into the pipe being tested. CONTRACTOR shall provide fluid for other types of testing required.
 - 8. Repair observed leaks and repair pipe that fails to meet acceptance criteria. Retest after repair.

9. Unless otherwise specified, testing shall include existing piping systems that connect with new piping system. Test existing pipe to nearest valve. Piping not installed by CONTRACTOR and that fails the test shall be repaired upon authorization of ENGINEER or OWNER. Repair of existing piping will be paid as extra work unless otherwise specified.

C. Test Schedule:

1. Refer to the Exposed Piping Schedule for type of test required and required test pressure.
2. Unless otherwise specified, the required test pressures are at lowest elevation of pipeline segment being tested.
3. For piping not listed in Exposed Piping Schedule:
 - a. Hydrostatically test pipe that will convey liquid at a pressure greater than five psig. Provide process air pipe test for pipe that will convey air or gas under pressure or vacuum.
 - b. Disinfect for bacteriological testing piping that conveys potable water.
4. Test Pressure:
 - a. Use test pressures listed in Exposed Piping Schedule.
 - b. If test pressure is not listed in Exposed Piping Schedule, or if a test is required for piping not listed in the Exposed Piping Schedule, test pressure will be determined by the ENGINEER based on the maximum anticipated sustained operating pressure and the methods described in the applicable ANSI/AWWA manual or standard that applies to the piping system.

D. Hydrostatic Testing:

1. Preparation for Testing:
 - a. For thermoplastic pipe, follow procedures described in Section 7 of ANSI/AWWA Standard C605.
 - b. For steel pipe, follow procedures described in AWWA Manual M11. Wetting period is not required for pipe that is not cement-lined.
 - c. For other piping follow procedures described in AWWA Manual M9. A wetting period is not required for pipe that is not cement mortar-lined.
 - d. Prior to testing, ensure that adequate thrust protection is in place and all joints are properly installed.
2. Test Procedure:
 - a. Fill pipeline slowly to minimize air entrapment and surge pressures. Fill rate shall not exceed one foot of pipe length per second in the pipe being tested.
 - b. Expel air from pipe as required. Obtain approval of ENGINEER prior to tapping pipe for expelling air.
 - c. Examine joints and valves, and make repairs to eliminate visible leakage.
 - d. After specified wetting period, add fluid as required to pressurize line to required test pressure. Maintain test pressure for a stabilization period of ten minutes before beginning test.

- e. Timed test period shall not begin until after the pipe has been filled, exposed to the required wetting period, air has been expelled, and pressure stabilized.
 - f. Timed Test Period: After the stabilization period, maintain test pressure for at least two hours. During timed testing period, add fluid as required to maintain pressure within five psig of required test pressure.
 - g. Pump from a test container to maintain test pressure. Measure volume of fluid pumped from test container and record on test report. Record pressure at test pump at fifteen minute intervals for duration of test.
3. Allowable Leakage Rates: Leakage is defined as the quantity of fluid supplied to pipe segment being tested to maintain pressure within five psi of the test pressure during timed test period. Allowable leakage rates for piping are:
- a. No Leakage: Pipe with flanged, welded, fused, threaded, soldered, or brazed joints.
- E. Examination of Welds:
- 1. Personnel performing examination of welds shall be qualified to at least Level II, in accordance with ASNT SNT-TC-1A.
 - 2. Conform to ASME Boiler and Pressure Vessel Code Section V and applicable articles for examination of welds.
 - 3. Visually examine all welds, Category D Fluid Service, in conformance with ASME B31.3.
 - 4. Examine at least ten percent of welds using liquid penetrant examination.
 - 5. If a defect is detected, all welds shall be examined by liquid penetrant examination.
 - 6. At conclusion of liquid penetrant examination, remove penetrant test materials by flushing, washing, or wiping clean with applicable solvents.
- F. Bacteriological Testing:
- 1. Bacteriological testing for potable water lines, finished water lines, and other piping per Exposed Piping Schedule, is specified in Article 3.7 of this Section.

3.7 CLEANING AND DISINFECTION

- A. Cleaning, General: Clean pipe systems as follows:
- 1. Thoroughly clean all piping, including flushing with water, dry air, or inert gas as required, in a manner approved by ENGINEER, prior to placing in service.
 - 2. For piping that requires disinfection and has not been kept clean during storage or installation, swab each section individually before installation with a five percent hypochlorite solution.
- B. Disinfection:
- 1. Disinfect all potable and finished water piping.

2. A suggested procedure for accomplishing complete and satisfactory disinfection is specified below. Other procedures may be considered for acceptance by ENGINEER.
 - a. Prior to disinfection, clean piping as specified and flush thoroughly.
 - b. Conform to procedures described in ANSI/AWWA C651. Continuous feed method of disinfecting shall be used, unless alternative method is acceptable to ENGINEER.
3. Water for initial flushing, testing, and disinfection will be furnished by OWNER. CONTRACTOR shall provide all temporary piping, hose, valves, appurtenances, and services required. Cost of water required for re-disinfection will be paid by CONTRACTOR to OWNER at the water utility's standard rates.
4. Chlorine shall be provided by CONTRACTOR.
5. Bacteriologic tests will be performed by CONTRACTOR. A certified test laboratory report will be provided to OWNER, if requested.
6. Chlorine concentration in the water entering the piping shall be between 50 and 75 ppm, such that a minimum residual concentration of 25 mg/l remains after a 24-hour retention period. Disinfect the piping and all related components. Repeat as necessary to provide complete disinfection.
7. After required retention period, the chlorinated water shall be flushed to a closed drain line, unless otherwise directed by ENGINEER. Properly dispose of chlorinated water in accordance with applicable regulations. Do not discharge chlorinated water to storm sewers, ditches, or overland without adequate de-chlorination.

3.8 EXPOSED PIPING SCHEDULE

- A. The schedules listed below, following the "End of Section" designation, are a part of this Specification section.
 1. Table 40 05 05-A, Exposed Piping Schedule.

+ + END OF SECTION + +

TABLE
40 05 05-A, EXPOSED PIPING SCHEDULE

Service	Diameter (inch)	Material	Interior Lining	Exterior Coating	Pressure Class/ Thickness	Joint	Test	Remarks
PW	12-16	DIP	CL	P	350 psi	flg	HYD (150)	HSP discharge head

The following abbreviations are used in the Exposed Piping Schedule.

A. Service Abbreviations

Service	Abbrev.
Raw Water	RW
Potable Water	PW
In Plant Potable Water	PI W

B. Material Abbreviations

Material	Abbrev
Ductile Iron	DI
Polyvinyl Chloride	PVC
Stainless Steel	SS

C. Lining/Coating Abbreviations

Lining	Abbrev	Coating	Abbrev.
Cement Mortar Lined	CL	Painted	P

D. Joint Abbreviations

Joint Type	Abbrev	Joint Type	Abbrev.
Solvent Weld	SW	Flanged	Flg
Compression Fitting	CF	Threaded	Thd
Tapered Butt and Weld	TBW		

E. Test Abbreviations

Test	Abbrev	Test	Abbrev.
Hydrostatic Test (test pressure in psig)	HYD ()	Disinfection and Bacteriological Testing	DBT
No Test Required	NR		

SECTION 40 05 19

DUCTILE IRON PROCESS PIPE

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish ductile iron pipe and fittings.
2. Extent of piping is shown on the Drawings. Piping schedules in Section 40 05 05, Exposed Piping Installation, specify pipe service, diameter, material, lining, coating, pressure rating, joint type, and testing required.

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate installation of items to be installed with or before ductile iron pipe Work.

C. Related Sections:

1. Section 09 91 00, Painting.
2. Section 40 05 05, Exposed Piping Installation.

1.2 REFERENCES

A. Standards referenced in this Section are:

1. ANSI B18.2.1, Square and Hex Bolts and Screws Inch Series.
2. ANSI B18.2.2, Square and Hex Nuts. (Inch Series).
3. ASTM A193, Alloy Steel and Stainless Steel Bolting Materials for High-Temperature Service.
4. ASTM A194, Specification for Carbon Steel and Alloy Steel Nuts for Bolts for High-Pressure or High-Temperature Service, or Both.
5. ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
6. ASTM A354, Specification for Quenched and Tempered Alloy Steel Bolts, Studs and Other Externally Threaded Fasteners.
7. ASTM A563, Specification for Carbon and Alloy Steel Nuts.
8. ASTM B117, Practice for Operating Salt Spray (Fog) Apparatus.
9. ASTM C283, Test Methods for Resistance of Porcelain Enameled Utensils to Boiling Acid.
10. ASTM D714, Test Method for Evaluating Degree of Blistering of Paints.
11. ASTM D792, Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.

12. ASTM D5162, Discontinuity (Holiday) Testing of Non-Conductive Protective Coating on Metallic Substrates.
13. ASTM E96, Test Methods for Water Vapor Transmission of Materials.
14. ASTM G14, Test Method for Impact Resistance of Pipeline Coatings (Falling Weight Test).
15. ASTM G62, Test Methods for Holiday Detection in Pipeline Coatings.
16. ASTM G95, Test Methods for Cathodic Disbondment Test of Pipeline Coatings (Attached Cell Method).
17. ANSI/AWWA C104, Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water.
18. ANSI/AWWA C110, Ductile Iron and Gray Iron Fittings for Water.
19. ANSI/AWWA C111, Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings.
20. ANSI/AWWA C115, Flanged Ductile Iron Pipe with Ductile Iron or Gray Iron Threaded Flanges.
21. ANSI/AWWA C116, Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile Iron and Gray Iron Fittings for Water Service.
22. ANSI/AWWA C151, Ductile Iron Pipe, Centrifugally Cast, for Water.
23. ANSI/AWWA C153, Ductile Iron Compact Fittings, 3 inch through 24 inch and 54 inch through 64 inch for Water Service.
24. ANSI/AWWA C606, Grooved and Shouldered Type Joints.
25. European Standard (EN), EN 598: Ductile Iron Pipe, Fittings, Accessories and Their Joints for Sewerage Applications.
26. MSS-SP 60, Connecting Flange Joint Between Tapping Sleeves and Tapping Valves.
27. NACE RP0188, Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates.
28. NAPF 500-03, Surface Preparation Standard for Ductile Iron Pipe and Fittings Receiving Special External Coatings and/or Special Internal Linings.
29. NSF/ANSI 61, Drinking Water System Components - Health Effects.
30. SSPC PA 2, Measurement of Dry Coating Thickness with Magnetic Gages.
31. SSPC Painting Manual, Volume 1, Para. XIV.

1.3 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer:
 - a. Manufacturer shall have a minimum of five years successful experience producing ductile iron pipe and fittings and shall be able to show evidence of at least five installations in satisfactory operation in the United States that are similar applications to the specified service.
 - b. Lining and coating products shall be manufactured by a firm with a minimum of five years successful experience in protecting pipelines exposed to the specified service conditions , and shall be able to show

evidence of at least five installations in satisfactory operation in the United States that are similar applications to the specified service.

- c. When not applied by the manufacturer, lining and coating Subcontractor shall have a minimum of five years successful experience in the application of the specified linings and coatings for similar applications for the specified service, and shall be able to show evidence of at least five installations in satisfactory operation in the United States.

B. Supply and Compatibility:

1. Unless otherwise approved, obtain all pipe, fittings, and appurtenances included in this Section from a single ductile iron pipe manufacturer.
2. Ductile iron pipe manufacturer shall review and approve or prepare all Shop Drawings and other submittals for pipe, fittings, and appurtenances furnished under this Section.
3. Pipe, fittings, and appurtenances shall be suitable for the specified service and shall be integrated into overall piping system by ductile iron pipe manufacturer.
4. Ductile iron pipe manufacturer shall be responsible for all products and all factory-applied linings and coatings, whether installed at pipe manufacturer's facility or at manufacturer's Supplier's facility.

C. Regulatory Requirements:

1. Pipe and fittings, including linings and coatings, that will convey potable water or water that will be treated to become potable, shall be certified by an accredited organization in accordance with NSF/ANSI 61 as being suitable for contact with potable water, and shall comply with requirements of authorities having jurisdiction at Site.

1.4 SUBMITTALS

A. Action Submittals: Submit the following with Shop Drawings required under Section 40 05 05, Exposed Piping Installation:

1. Shop Drawings:
 - a. Detailed drawings and data for pipe, fittings, gaskets, appurtenances, linings, and coatings.

B. Informational Submittals: Submit the following:

1. Certificates:
 - a. Submit certificate signed by manufacturer of each product that product conforms to applicable referenced standards and the Contract Documents.
 - b. Submit certificate signed by applicator of the linings and coatings stating that product to be applied conforms to applicable referenced standards and that the applicator shall conform to the Contract Documents.

2. Source Quality Control Submittals:
 - a. Submit results of specified shop tests for pipe, fittings, linings, and coatings.
 - b. Lining and coating test coupons.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Refer to Section 40 05 05, Exposed Piping Installation.
- B. Handling of Pipe and Fittings Lined with Ceramic Epoxy, Fusion Bonded Epoxy, or Glass: Lifting devices shall not come into contact with lined surfaces. Use hooks, forks, chains, straps, and other lifting devices only on exterior of pipe and fittings. Pipe and fittings with damaged lining shall be replaced regardless of cause of damage.
- C. Handling of Fittings Coated with Fusion Bonded Epoxy: Hooks, forks, chains, straps, and other lifting devices shall be rubber-coated and be used only on exterior of fittings in manner to avoid damaging coating. If coating becomes damaged, notify pipe and coating manufacturer to determine if repair of damaged area or re-coating is required. Perform repairs using recommended procedures and materials provided by manufacturer, as accepted by ENGINEER. Pipe and fittings requiring re-coating shall be removed from Site and returned to manufacturer's facility. Repaired or re-coated pipe and fittings shall comply with requirements of this Section.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. General:
 1. Piping systems shall be suitable for their intended use.
 2. Joints shall be as specified in Section 40 05 05, Exposed Piping Installation. If not specified, provide flanged joints for exposed piping and push-on or mechanical joints for buried piping. Provide couplings on pipe with plain or grooved ends where shown or where approved by ENGINEER.
- B. Ductile Iron Pipe, Joints, and Fittings:
 1. Flanged Pipe: Fabricate in accordance with ANSI/AWWA C115.
 - a. Pressure Rating: As specified in piping schedule in Section 40 05 05, Exposed Piping Installation. If not otherwise specified, use Special Thickness Class 53 for three-inch to 54-inch diameter pipe.
 2. Non-Flanged Pipe: Conform to ANSI/AWWA C151 for material, pressure, dimensions, tolerances, tests, markings, and other requirements.
 - a. Pressure Class: As specified in piping schedules in Section 40 05 05, Exposed Piping Installation.

- b. Special Thickness Class: As specified in piping schedules in Section 40 05 05, Exposed Piping Installation.
3. Pipe Joints:
- a. Flanged Joints: Conform to ANSI/AWWA C110 and ANSI/AWWA C111 capable of meeting the pressure rating or special thickness class, and test pressure specified in piping schedule in Section 40 05 05, Exposed Piping Installation.
 - 1) Gaskets: Unless otherwise specified, gaskets shall be at least 1/8-inch thick, ring or full-face as required for the pipe, of synthetic rubber compound containing not less than 50 percent by volume nitrile or neoprene, and shall be free from factice, reclaimed rubber, and other deleterious substances. Gaskets shall be suitable for the service conditions specified, specifically designed for use with ductile iron pipe and fittings.
 - 2) Bolts: Comply with ANSI B18.2.1.
 - a) Exposed: ASTM A307, Grade B.
 - b) Buried or Submerged: ASTM A193, Grade B8M, Class 2, Heavy hex, Type 316 stainless steel.
 - 3) Nuts: Comply with ANSI B18.2.2.
 - a) Exposed: ASTM A563, Grade A, Heavy hex.
 - b) Buried or Submerged: ASTM A194, Grade B8M, Heavy hex, Type 316 stainless steel.
 - b. Mechanical Joints: Comply with ANSI/AWWA C111 and ANSI/AWWA C151, capable of meeting pressure rating or special thickness class, and test pressure specified in piping schedules in Section 40 05 05, Exposed Piping Installation.
 - 1) Glands: Ductile iron.
 - 2) Gaskets: Plain tip.
 - 3) Bolts and Nuts: High strength, low alloy steel.
 - 4) Manufacturers: Provide products of one of the following:
 - a) Clow Water Systems Company
 - b) Atlantic States Cast Iron Pipe Company
 - c) Canada Pipe Company, Ltd.
 - d) McWane Cast Iron Pipe Company
 - e) Pacific States Cast Iron Pipe Company
 - f) Griffin Pipe Products Co.
 - g) American Cast Iron Pipe Co.
 - h) U.S. Pipe and Foundry Co.
 - i) Or equal.
 - c. Push-On Joints: Comply with ANSI/AWWA C111 and ANSI/AWWA C151, capable of meeting pressure class or special thickness class, and test pressure specified in piping schedule Section 40 05 05, Exposed Piping Installation.
 - 1) Gaskets: Vulcanized SBR, unless otherwise specified.
 - 2) Stripes: Each plain end shall be painted with a circular stripe to

- provide a guide for visual check that joint is properly assembled.
- 3) Products and Manufacturers: Provide one of the following:
 - a) Tyton or Fastite Joint by Clow Water Systems, Atlantic States Cast Iron Pipe Company, Canada Pipe Company, Ltd., McWane Cast Iron Pipe Company, Pacific States Cast Iron Pipe Company, and Griffin Pipe Products Company.
 - b) Fastite Joint by American Cast Iron Pipe Company.
 - c) Tyton Joint by U.S. Pipe and Foundry Company.
 - d) Or equal.
 - d. Grooved End Joints: Comply with ANSI/AWWA C606.
 - 1) Gaskets: Flush seal type designed for ductile iron that complies with or exceeds requirements of ASTM D2000.
 - 2) Bolts and nuts: As specified for flanged joints.
 - 3) Unless otherwise specified, grooved end couplings shall be rigid joint for exposed service and flexible joint for buried service.
 - 4) Products and Manufacturers: Provide one of the following:
 - a) Victaulic, Style 31.
 - b) Or equal.
 - e. Restrained Joints: Restrained push-on joints shall be capable of being deflected after full assembly. Field cuts of restrained pipe are not allowed without approval of ENGINEER.
 - 1) Products and Manufacturers: Provide restrained joints for mechanical joint piping by one of the following:
 - a) Megalug, Series 1100, by EBBA Iron Sales, Inc.
 - b) MJ Coupled Joint, by American Cast Iron Pipe Co.
 - c) MJ Field Lok, by U.S. Pipe and Foundry Co.
 - d) Or equal.
 - 2) Products and Manufacturers: Provide restrained joints for push-on joint piping by one of the following:
 - a) Super-Lock Joint Pipe, by Clow Water Systems, a division of McWane, Inc.
 - b) Lok-Ring Joint, or Flex-Ring Joint, by American Cast-Iron Pipe Company.
 - c) TR Flex Joint, by U.S. Pipe and Foundry Company.
 - d) Snap-Lok, by Griffin Pipe Products Company.
 - e) Or equal.
 4. Flanged and Push-On Joint Fittings: Comply with ANSI/AWWA C110 and ANSI/AWWA C153.
 - a. Material: Ductile iron.
 - b. Pressure rating, gaskets, bolts, and nuts shall be as specified for flanged joints. Pressure rating of fittings shall meet, but not exceed, specified pressure rating or special thickness class of the connected pipe.
 5. Mechanical Joint Fittings: Comply with ANSI/AWWA C110 and ANSI/AWWA C153.
 - a. Material: Ductile iron.

- b. Glands: Ductile iron.
- c. Pressure rating, gaskets, bolts, and nuts shall be as specified for mechanical joints. Pressure rating of fittings shall meet, but not exceed, specified pressure rating or special thickness class of connected pipe.

C. Lining, General:

1. Typical Service Conditions:

Property	Pump Head to Conveyance
Fluid(s) Conveyed Through Pipe	Potable Water
pH range	7
Temperature Range (degrees F)	70
Maximum Fluid Velocity (fps)	6.24
Lining Type	cement

2. Surface Preparation:

- a. Initial Surface Inspection: Surface to be lined shall be inspected by pipe and fitting manufacturer and applicator, if applicator is other than pipe and fitting manufacturer. Inspecting parties shall inspect surface to be coated and mutually determine recommended surface preparation method.
- b. Surface Preparation: Prepare surface in accordance with recommended method.
- c. Finished Surface Inspection: Lining applicator shall inspect finished surface prior to application to determine acceptability. If surface is unacceptable, repeat surface preparation as necessary.

D. Cement-mortar Lining:

- 1. Where specified in piping schedules included with Section 40 05 05, Exposed Piping Installation, pipe and fittings shall be lined with bituminous seal coated cement-mortar lining in accordance with ANSI/AWWA C104.

E. Specials:

1. Transition Pieces:

- a. Provide suitable transition pieces (adapters) for connecting to existing piping.
- b. Unless otherwise shown or indicated, expose existing piping to determine material, dimensions, and other data required for transition pieces.

2. Taps:

- a. Provide taps where shown or required for small-diameter piping or instrumentation connections.
- b. Provide corporation stops where shown or required.
- c. Where pipe wall thickness or tap diameter will not allow engagement of four full threads, provide tapping saddle with outlet joints conforming to

requirements of Paragraph 2.1.B.3.b. for 14-inch through 54-inch diameter pipe.

- d. For flanged connections on tapping saddle outlet branch, counterbore flange in accordance with MSS SP-60 dimensions. Inside diameter of outlet shall be 1/4-inch greater than nominal diameter.

2.2 MARKING FOR IDENTIFICATION

- A. In addition to identification markings specified in Section 40 05 05, Exposed Piping Installation, also stamp, mark, and identify push-on joint and mechanical joint pipe with:
 1. Name or trademark of manufacturer.
 2. Weight, class or nominal thickness, and casting period.
 3. Country where cast.
 4. Year the pipe was produced.
 5. Letters "DI" or "Ductile" shall be cast or metal stamped.
- B. In addition to identification markings specified in Section 40 05 05, Exposed Piping Installation, also stamp, mark, and identify flanged pipe with:
 1. Flange manufacturer's mark, size, and letters "DI" cast or stamped on the flanges.
 2. Fabricator's mark if other than flange manufacturer.
 3. Length and weight.
- C. In addition to identification markings specified in Section 40 05 05, Exposed Piping Installation, also stamp, mark, and identify fittings with:
 1. Manufacturer's identification.
 2. Pressure rating.
 3. Nominal diameters of openings.
 4. Country where cast.
 5. Number of degrees or fraction of the circle on bends.
 6. Letters "DI" or "Ductile" cast on them.

2.3 EXTERIOR SURFACE PREPARATION AND COATINGS

- A. General Coating Requirements:
 1. Coating types are specified in piping schedules in Section 40 05 05, Exposed Piping Installation.
- B. Exposed Pipe and Fittings:
 1. Surface Preparation:
 - a. Initial Surface Inspection: Pipe and fitting manufacturer and coating applicator shall inspect surface to be coated and mutually determine recommended NAPF 500-03 surface preparation method.

- b. Surface Preparation: Prepare surface in accordance with recommended NAPF 500-03 method.
 - c. Finished Surface Inspection: Prepared surfaces shall be inspected by coating applicator prior to application to determine acceptability of finished surface. If surface is unacceptable, repeat surface preparation and re-application as necessary.
2. After recommended surface preparation, prime coat exterior ferrous metal surfaces of pipe and fittings in the shop in accordance with Section 09 91 00, Painting.
3. Field painting shall comply with Section 09 91 00, Painting.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Inspect piping to assure that piping is free from defects in material and workmanship. Verify compatibility of pipe, fittings, gaskets, linings, and coatings.

3.2 INSTALLATION AND FIELD QUALITY CONTROL

- A. For exposed piping installation and testing, refer to Section 40 05 05, Exposed Piping Installation.

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SECTION 40 05 93

COMMON MOTOR REQUIREMENTS FOR PROCESS EQUIPMENT

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. Electric motors and accessories to be furnished under other equipment Sections shall comply with this Section, unless specified otherwise in the Section for the associated driven equipment.
2. Motor horsepower and voltage ratings, speed, enclosure type, and unusual service conditions (such as ambient temperatures above 40 degrees C, corrosive areas requiring severe duty motors, and variable frequency drive applications requiring inverter duty motors), and requirements for witnessing shop tests shall be as specified in the Sections for the associated driven equipment. Specific accessories and construction features may also be required by the Sections on the associated driven equipment.

1.2 REFERENCES

A. Standards referenced in this Section are:

1. ASTM A48/A48M, Specification for Gray Iron Castings.
2. ASTM B117, Practice for Operating Salt Spray (Fog) Apparatus.
3. IEEE 112, Test Procedure for Polyphase Induction Motors and Generators.
4. IEEE 522, Guide for Testing Turn-to-Turn Insulation on Form-Wound Stator Coils for Alternating Current Electric Machines.
5. IEEE 841, Petroleum and Chemical Industry - Premium-Efficiency, Severe-Duty, Totally Enclosed Fan-Cooled (TEFC) Squirrel Cage Induction Motors – Up to and Including 370 KW (500 HP).
6. IEEE 1043, Recommended Practice for Voltage Endurance Testing of Form-Wound Bars and Coils.
7. NEMA MG 1, Motors and Generators. (This Section's references to NEMA MG 1 followed by a hyphen and number, such as “NEMA MG 1-20.14”, indicate the associated NEMA MG 1 paragraph reference.)
8. ANSI/NETA ATS, Acceptance Testing Specifications for Electrical Power Equipment and Systems.
9. UL 1004, Electric Motors.

1.3 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer:

- a. Manufacturer shall have not less than five years experience producing equipment substantially similar to that required and shall be able to submit documentation of at least five installations in satisfactory operation for at least five years each.

1.4 SUBMITTALS

A. Action Submittals: Submit the following:

1. Shop Drawings:

- a. Data sheets indicating nameplate data for fractional-horsepower motors.
- b. Outline drawing or data sheet indicating complete motor dimensions for motors rated greater than 1/3-hp. Several motors of the same type and rating for the same application may be covered by an appropriate single drawing or data sheet. Drawings and data sheets shall have complete identifying data including frame size, speed, horsepower ratings, and application for each particular motor.
- c. Details of motor heaters, winding thermal protection, and other accessories.
- d. Copies of motor characteristic curves and data inputs when required for programming motor protection and management relays.

2. Product Data:

- a. Submit motor test data sheets for each motor rated one horsepower or greater. Values indicated on test data sheets shall be from tests of a previously manufactured, electrically duplicate motor or calculated data. Mark each test data sheet to indicate the Project motor application location, manufacturer, type, frame size, horsepower, voltage, speed, bearing type, lubrication medium and enclosure type. Test data sheet shall also include:
 - 1) Winding resistances.
 - 2) Torques.
 - 3) Efficiencies.
 - 4) Power factors.
 - 5) Slip.
 - 6) Full load amperes.
 - 7) Locked rotor and no load amperes.
 - 8) Nameplate temperature and results of dielectric tests.

3. Testing Plans and Procedures:

- a. When witnessed source quality control testing is required in the Section for associated driven equipment, submit description of proposed shop testing methods, procedures, and testing apparatus with calibration dates,

together with proposed testing schedule and proposed travel and logistical plans for testing.

- B. Informational Submittals: Submit the following:
1. Manufacturer's Instructions:
 - a. Instructions and recommendations for handling, storing, protecting the motors.
 - b. Installation data for motors, including setting drawings, templates, and directions and tolerances for installing anchorage devices.
 2. Source Quality Control Submittals:
 - a. Written reports presenting results of required shop testing. Shop test reports shall be dated and signed by motor manufacturer.
 - b. When witnessed shop tests are required, shop test results shall be signed by and shall bear the seal of registered professional engineer. Name on seal, registration or license number, and jurisdiction or registration of license shall be legible.
 3. Field Quality Control Submittals:
 - a. Written reports presenting results of required field testing and inspections. Field testing reports shall be dated and signed by CONTRACTOR.
 4. Supplier Reports:
 - a. Submit written report of results of each visit to Site by Supplier's service personnel, including purpose and time of visit, persons contacted, problems encountered and resolved, tasks performed, results obtained, and other pertinent information. Submit within two days of completion of visit to the Site.
 5. Qualifications Statements:
 - a. Submit manufacturer's qualifications data when requested by ENGINEER.
- C. Closeout Submittals: Submit the following:
1. Operation and Maintenance Data:
 - a. Furnish operation and maintenance data for motors as part of the operations and maintenance data for the associated driven equipment.
 - b. Comply with Section 01 78 23, Operations and Maintenance Data.
- D. Maintenance Material Submittals: Submit the following:
1. Spare Parts and Extra Stock Materials: For each motor size and type, furnish spare parts in accordance with motor manufacturer's recommendations, including the following for three-phase motors:
 - a. One set of fans and guards for each set of three or fewer motors, for each size of totally-enclosed fan-cooled motor.
 - b. One set of bearing liners, or renewable ball or roller bearings, for each set of three or fewer motors, for each type and size of motor.

- c. One set of oil rings, for each sleeve bearing motor.
- d. One set of bearing temperature detectors, for each set of three or fewer motors, of each type of motor.
- e. One quart-sized can of motor touch up paint.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Packing, Shipping, Handling, and Unloading:
 - 1. Ship motors with openings sealed.
- B. Storage and Protection:
 - 1. Protect materials and equipment from corrosion and deterioration.

PART 2 – PRODUCTS

2.1 EQUIPMENT PERFORMANCE

- A. Equipment Description:
 - 1. Comply with motor requirements specified in the Sections for the associated driven equipment.
 - 2. Motors shall be suitable for continuous operation at an elevation of up to 3,300 feet above mean sea level, at ambient temperatures ranging from -25 degrees C to 40 degrees C, unless specified otherwise in the Section for the associated driven equipment.

2.2 CONSTRUCTION – GENERAL

- A. Unless specified otherwise in Sections on the associated driven equipment, motors shall have the following features of construction and operation:
 - 1. Successfully operate under power supply variations in accordance with NEMA MG 1-14.30 and NEMA MG 1-20.14.
 - 2. NEMA Design B with torque and starting currents in accordance with NEMA MG 1, except in special high-torque applications, as specified in the Section for the associated driven equipment, which may require NEMA Design C.
 - 3. Motors shall operate within their full load rating without applying the service factor, unless specified otherwise in Section for the associated driven equipment.
 - 4. Speed and horsepower specified or required to properly operate the associated driven equipment and torque characteristics required by the drive load and suitable for direct coupling or V-belt drive, as specified in the Section for the associated driven equipment.
 - 5. Constructed for full-voltage starting.

6. Fabricated steel or cast-iron frames with integrally cast feet or bases, cast-iron end bells, cast iron or steel conduit boxes and covers and bases with precision machined bearing fits, ASTM A48/A48M, Class 25 or better. For each TEFC motor, provide UL-approved automatic stainless steel breather drains in lowest part of front and back brackets to allow drainage of condensation.
7. Stator core assembly shall consist of stacked lamination made from specially selected electrical sheet silicon steel.
8. Rotor cages shall be die-cast or fabricated aluminum or fabricated copper or copper alloy. Shafts shall be carbon steel unless specified otherwise in this Section or in the Section on the associated driven equipment.
9. Rotors shall be keyed shrunk or welded to shaft and rotating assembly, dynamically balanced to NEMA limits. Use rivets to secure balance weights, if required, to rotor resistance ring or fan blades. Machine screws and nuts are unacceptable. Coat entire rotating assembly between bearing inner caps with corrosion-resistant epoxy.
10. Bolt and cap screws shall be high-strength, SAE Grade 5 zinc-plated and chromatic steel. Screwdriver slot fasteners are unacceptable.
11. Motors shall be shop-painted at the motor fabrication facility. Finish coat shall be the same color as the associated driven equipment. Final paint finish shall be corrosive resistant and capable of passing ASTM B117 250-hour salt spray test. Motors will be located outdoors shall have coating resistant to degradation or chalking in sunlight. Provide polyurethane clear coat as final motor coating. Field applied paint shall not be accepted.

2.3 THREE-PHASE AC MOTORS

- A. General: Unless specified otherwise in the Sections for the associated driven equipment, provide three-phase motors with the following features:
 1. Premium, energy-efficient construction complying with NEMA MG 1.
 2. Motor efficiency determined in accordance with NEMA MG 1-12.58.
 3. Minimum and nominal full-load efficiencies not less than those listed in: NEMA MG 1 Table 12-12 for motors rated 600 volts and smaller, and NEMA MG 1 Table 12-13 for motors rated larger than 600 volts and equal to or less than 5,000 volts.
 4. Motors shall be constructed for operation on three-phase, 60 Hertz, alternating current system. Motor voltage and variable frequency operation, where required, shall be as specified in the Sections for the associated driven equipment. Voltage ratings shall be 460 volts for 480-volt systems.
 5. Unless otherwise required by the load, motors shall be NEMA Design B, normal starting torque. Locked rotor KVA/HP shall not exceed NEMA Code Letter G for motors 20 hp and larger.
 6. Motor frame shall be a rigid structure, constructed to maintain the lamination in correct alignment, and shall not depend on lamination or bolts for rigidity.
 7. Severe-duty totally-enclosed motors shall comply with IEEE 841.

B. Bearings:

1. Use anti-friction type bearings for NEMA frame motors. Use sleeve type bearings when specified in the Section for the associated driven equipment.
2. Bearings shall be electrically isolated. Insulate the bearings for inverter-duty motors 100 hp and larger, to prevent shaft currents and related bearing damage.
3. Bearings for motors shall be grease lubricated, ball type, unless specified otherwise in the Section for the associated driven equipment. Bearings shall have inlet fittings and outlet plugs. Protect bearings and grease reservoirs from entry of contaminants. Provide suitable fittings to allow convenient positive purging of old grease during re-greasing.
4. Sleeve bearings shall be ring-oiled with adequate, integral self-cooled oil reservoir. Bearing sleeves shall be lined with high tin content babbitt to minimize oil contamination. Close running shaft seals shall prevent oil leakage as well as prevent entrance of foreign material such as water and dirt into the bearing area. Provide oil level sight gauges with permanently-marked easily-discernible oil level. Provide inspection openings to observe the oil rings.
5. When specified in Section for the associated driven equipment or required by motor speed and bearing size, provision shall be made for forced lubrication. Provide oil rings and an adequate oil reservoir in bearing housings to allow orderly shutdown of motor in the event of failure of forced feed lubrication system.
6. Provide vertical motors with thrust bearings adequate for all thrusts to which motor can be subjected. Rated minimum B-10 life of the thrust bearings shall be at least 20,000 hours when operated at rated speed and full load thrust. Manufacturers of the associated driven equipment shall furnish motor manufacturer with speed and thrust conditions required by the associated driven equipment.

C. Insulation:

1. Insulation systems shall be rated Class F, with a service factor of 1.15 times motor's nameplate horsepower rating when operated on a sine wave power supply, and a service factor of 1.00 on an adjustable frequency power supply. Temperature rise shall be limited to Class B insulation system when motor is operated continuously at rated horsepower with ambient temperature not exceeding 40 degrees C, unless specified otherwise in the Section for the associated driven equipment.
2. Windings shall be epoxy-coated. Treat windings with insulating compound suitable for protecting against moisture, salt air, and slightly acidic and alkaline conditions. Insulation system for enclosed motors shall be upgraded to increase moisture resistance.
3. Motors shall have vacuum/pressure-impregnated epoxy insulation (VPI) for moisture resistance. Motors shall be preheated before VPI and baked in temperature-controlled oven.

4. Stator windings and end turn connections shall be fully brazed to withstand full voltage starting, regardless of the starting method indicated in the Section for the associated driven equipment. Bracing system shall essentially eliminate coil vibration under the high-current conditions of starting as well as during normal operation. When a tied system is used, system shall be such that no tie depends on the integrity of another tie within the system.

D. Enclosures:

1. Motor enclosure type shall be as specified in the Section for the associated driven equipment. Enclosure types shall comply with the following:
 - a. Totally enclosed, fan cooled and non-ventilated motors shall have cast-iron frame, cast-iron end brackets, and cast-iron conduit box. Provide drain holes on each end of motor.
2. Motor conduit boxes shall be split from top to bottom, shall be capable of being rotated to four positions 90 degrees apart, and shall comply with the following:
 - a. Boxes shall be gasketed with rubber-like gaskets between frame and conduit box and between conduit box and conduit box cover.
 - b. Provide box or opening in motor housing with conduit hub type fitting to allow threaded conduit connections.
 - c. Box shall be oversized two times NEMA standard for maintenance safety.
 - d. Protective and auxiliary devices shall terminate in auxiliary conduit boxes.
 - e. Terminal leads shall be flexible and of sufficient length to extend for distance of not less than ten inches beyond face of terminal box. Terminal leads shall be fitted with solderless lugs suitable for attachment to lugs installed on external wiring. Leads shall be sealed with non-wicking, non-hygroscopic insulating material, or insulating "wrap-cap" as manufactured by Ideal Industries, or equal.
 - f. Provisions for terminal box size, length of leads, size of conduit openings, and type of terminal lugs shall be complied with irrespective of other standards or practice.
 - g. Provide motor frame grounding stud inside conduit box. Stud shall include a drilled and tapped hole.

E. Motors for Use with Variable Frequency Drives:

1. Motors shall be inverter duty and compatible with characteristics of the intended variable frequency inverters.
2. Motors shall comply with the performance standards of IEEE, NEMA MG 1-31 and 33.

F. Vertical Motors:

1. Vertical motors shall have Type P base specifically constructed for vertical installation. Universal position motors are unacceptable.

2. Vertical motors shall have solid shafts, unless otherwise specified in Section for the associated driven equipment.
- G. Lifting Eyes: Motors weighing more than 50 pounds shall include at least one lifting eye or lifting lug. Construct motor and lifting eyes or lifting lugs to bear motor's full weight.

2.4 ACCESSORIES

- A. General:
1. Provide motor accessories in accordance with this Section unless specified otherwise in the Section for the associated driven equipment.
 2. Provide space heaters in motors five horsepower and larger installed outdoors, and in enclosed motors five horsepower and larger installed indoors in unheated spaces.
 3. Provide thermistor type winding thermal protection for motors in accordance with the following:
 - a. Constant speed motors 50 hp and larger up to and including 200 hp.
 - b. Variable speed motors 30 hp and larger up to and including 200 hp.
- B. Space Heaters:
1. Space heaters for condensation prevention shall operate at single phase, 120 volts and shall be sized to provide approximately 10 degrees C temperature rise above ambient.
 2. Heaters shall be low-density type for low surface temperature and long life.
- C. Winding Thermal Protection:
1. Thermistors embedded in each stator phase winding shall be in direct contact with the winding conductors. Each thermistor circuit shall be factory-wired to 120-volt solid-state control module mounted at the motor in box rated NEMA 4X. Control module contacts shall be automatic-reset type, rated 120 vac, five amps minimum, opening on excessive temperature. Provide normally-closed isolated contact for motor shutdown.
- D. Non-Reverse Ratchet:
1. Provide motors with non-reverse ratchets to provide immediate protection against reversing due to phase reversals or from backspin at shutdown of a pump.
 2. Ratchet shall provide for counterclockwise shaft rotation when viewed from the top of the motor.
- E. Motor Grounding Kit:
1. Provide permanent motor grounding kit to safely divert stray shaft currents to ground away from the motor bearings.

2. Motor grounding kit shall be “Press-in” type and installed in the factory.
3. Provide CDR as manufactured by Inpro/Seal, or equal.

2.5 IDENTIFICATION

A. Nameplates:

1. Nameplates shall be Type 316 stainless steel with embossed or pre-printed lettering and fastened to the motor frame with Type 316 stainless steel pins.
2. Nameplates shall have stamped on them the motor manufacturer’s name, voltage, number of Hertz and phases, horsepower rating, amperes and temperature rise at rated load, full load speed, locked rotor amperes or code letter, service factor, NEMA nominal efficiency, model number, insulation class, bearing number, serial number and maintenance manual number.
3. Name plates for explosion proof motors shall indicate the Division, Class and Group of the hazardous location in which the motor is intended for use.
4. Dual-voltage motor nameplates shall include connection diagrams.
5. Nameplate markings shall be in accordance with NEMA MG 1-10.

2.6 SOURCE QUALITY CONTROL

A. Shop Tests:

1. Perform shop testing on the motors at the manufacturer’s facility. Shop test shall be in accordance with NEMA MG 1, UL 674, and UL 1004 and shall demonstrate that the motors tested comply with the Contract Documents.
2. Submit shop test reports identifying tests performed and results obtained.
3. Motors shall be given Routine Test in accordance with NEMA MG 1-12.55 and IEEE 112. Test shall include the following:
 - a. Measurement of winding resistance.
 - b. No-load readings of current and speed at normal voltage and frequency.
 - c. Current input at rated frequency with rotor at standstill for squirrel-cage motors (locked rotor amperes).
 - d. High-potential test.
 - e. Bearing inspection.
4. Motors shall be given a “Complete Test” in accordance with IEEE 112 consisting of a “Routine Test” and a full-load heat run. When “Complete Tests” are required for a group of the same type, rating and horsepower for the same application, each motor of the group shall be given a “Complete Test”, unless specified otherwise in the Section for the associated driven equipment. Testing shall document the following:
 - a. Percent slip.
 - b. No-load speed, voltage, current, and losses at rated frequency.
 - c. Full-load current.
 - d. Locked-rotor torque.
 - e. Locked-rotor current.

- f. Breakdown torque (calculated).
- g. Starting torque (squirrel-cage).
- h. Winding resistance.
- i. Sound pressure level at no-load.
- j. Vibration levels.
- k. Efficiency current, and power factor at 100, 75, and 50 percent of full load and at service factor load.
- l. Stabilized full load temperature rise.

PART 3 – EXECUTION

3.1 INSTALLATION

A. General:

1. Install motors in accordance with the Contract Documents and manufacturer's instructions and recommendations. Obtain written interpretation from ENGINEER in the event of conflict between manufacturer's instructions and recommendations and the Contract Documents.
2. Install in accordance with Laws and Regulations.
3. Do not modify structures to facilitate installation of motors, unless approved in writing by ENGINEER.
4. Carefully and properly align motors with the driven equipment.
5. Secure motors to mounting surfaces with anchorage devices complying with manufacturer's recommendations that are of sufficient size and quantity to secure motor to equipment.
6. Until start-up and operation, tightly cover and protect motors from dirt, water, and chemical and mechanical damage.

3.2 FIELD QUALITY CONTROL

A. Site Tests:

1. Inspect motors prior to supplying electricity to (energizing) equipment. Do not energize equipment without ENGINEER's permission. Inspections shall include the following:
 - a. Inspect motor and equipment for physical damage.
 - b. Inspect motor for proper anchorage, mounting, grounding, connection, and lubrication.
 - c. Check for unusual noise and indications of overheating during initial or test operation.

B. Manufacturer's Services:

1. Preparing and submitting manufacturer's field report for each visit to the Site.

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SECTION 40 60 05

INSTRUMENTATION AND CONTROL FOR PROCESS SYSTEMS

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish, install, calibrate, test, start-up, and place in satisfactory operation a complete and operating instrumentation and control system.
2. The Work includes, but is not limited to, the following:
 - a. Furnishing and installing field mounted instruments.
 - b. Re-programming of existing programmable logic controller (PLC-2) to accept new “No Flow” status of High Service Pumps.
 - c. Modification of existing SCADA screens to reflect new “No Flow” status of High Service Pumps.

B. Coordination:

1. Instrumentation and Controls:
 - a. Instrumentation and controls are included in the Work by the instrumentation and controls (I&C) Subcontractor. Modification of both existing control logic and re-configuring of existing human machine interface (HMI) software is part of the Work.
 - b. CONTRACTOR shall coordinate with the equipment provided by I&C Subcontractor to provide a fully functional system complying with the Contract Documents.
 - c. Computer system input/output list identifies inputs and outputs required and is part of this Section. Input/output list is for coordinating signals between new and existing equipment to be terminated/reterminated, as well as identifying signals to be programmed by the I&C Subcontractor. Include Work for CONTRACTOR-furnished control options not on the input/output list at no additional cost to OWNER.
2. To centralize responsibility, materials and equipment provided under this Section shall be furnished by a single Supplier.

C. Related Sections:

1. Section 09 91 00, Painting.
2. Section 40 05 05, Exposed Piping Installation.
3. Section 40 05 31, Thermoplastic Process Pipe.

1.2 REFERENCES

- A. Standards referenced in this Section are:
1. ASTM A269, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 2. ASTM A312, Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.
 3. ASTM A403, Specification for Wrought Austenitic Stainless Steel Piping Fittings.
 4. ISA 5.1, Instrumentation Symbols and Identification.
 5. ISA 5.4, Instrument Loop Diagrams.
 6. ISA 20, Specification Forms for Process Measurement & Control Instruments, Primary Elements & Control Valves.
 7. NEMA 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
 8. UL 50, Safety Enclosures for Electrical Equipment, Non-Environmental Considerations.
 9. UL 508A, Industrial Control Panels.

1.3 QUALITY ASSURANCE

- A. Qualifications:
1. Supplier:
 - a. Shall be financially sound with at least five years continuous experience in designing, implementing, supplying, and supporting instrumentation and control systems for municipal water treatment facilities comparable to the instrumentation and control systems required for the Project, relative to hardware, software, cost, and complexity.
 - b. Shall have record of successful instrumentation and control system equipment installations. Upon ENGINEER's request, submit record of experience listing for each project: project name, owner name and contact information, name and contact information for contractor, name and contact information for engineer or architect, approximate contract value of instrumentation and controls Work for which Supplier was responsible.
 - c. Shall have at time of Bid experienced engineering and technical staff capable of designing, supplying, implementing, and supporting the instrument and control system and complying with submittal and training requirements of the Contract Documents.
 - d. Shall be capable of training operations and maintenance personnel in instrumentation and control applications, and in operating, programming, and maintaining the control system and equipment.
 - e. Shall have UL-approved panel shop.
 2. Manufacturer: Manufacturers of instrumentation and control equipment furnished under this Section shall be experienced producing similar equipment and shall have the following qualifications:

- a. Shall manufacture instrumentation and control system components that are fully-developed, field-proven, and of standardized designs.
- b. Shall have system of traceability of manufactured unit through production and testing in accordance with ANSI/ASQ Z1.4.
- c. Shall have guaranteed availability clause (99.99 percent, minimum for one year) for microprocessor-based components and appurtenances.
- d. Shall have documented product safety policy relevant to products proposed for the Work.

1.4 SUBMITTALS

A. Action Submittals: Submit the following:

1. Shop Drawings:

- a. Field Instruments:
 - 1) Manufacturer's product name and complete model number of devices proposed for use, including manufacturer's name and address.
 - 2) Instrument tag number in accordance with the Contract Documents.
 - 3) Data sheets and manufacturer's catalog literature. Provide data sheets in accordance with ISA 20 and annotated for features proposed for use. For instruments not included in ISA 20, submit data sheets using a format similar to ISA 20.
 - 4) Description of construction features.
 - 5) Performance and operation data.
 - 6) Installation, mounting, and calibration details; instructions and recommendations.
 - 7) Service requirements.
 - 8) Dimensions of instruments and details of mating flanges and locations of closed tanks, pipe sizes for insertion instruments, and upstream/downstream straight run pipe lengths required.
 - 9) Range of each device and calibration information.
 - 10) Descriptions of materials of construction and listing of NEMA ratings for equipment.
- b. Field wiring and piping diagrams, include the following:
 - 1) Wire and pipe sizes and types.
 - 2) Terminal numbers at field devices and in panels.
 - 3) Color coding.
 - 4) Conduit numbers in which wiring will be located.
 - 5) Locations, functional names, and manufacturer's designations of items to which wiring or piping are connected.
- c. Terminal wiring diagrams, including the following:
 - 1) Name of each panel, console, or cabinet.
 - 2) Wire sizes and types.
 - 3) Pipe sizes and types.
 - 4) Terminal strip and terminal numbers.
 - 5) Wire color coding.

- 6) Functional name and manufacturer's designation for components to which wiring and piping are connected.
 - d. Proposed operator interface graphics layouts. Each graphic display and process report layout will be subject to modification from CONTRACTOR's submitted format within limits of software package used for development. Implement such modifications in accordance with ENGINEER's comments.
 - 2. Product Data:
 - a. Product data for field instruments in accordance with requirements for Shop Drawings in this Section.
 - b. Product data for field wiring and piping provided for instrumentation and control service and not included under other Sections or contracts.
- B. Informational Submittals: Submit the following:
- 1. Manufacturer's Instructions:
 - a. Shipping, handling, storage, installation, and start-up instructions.
 - 2. Source Quality Control Submittals:
 - a. Factory test reports and results.
 - 3. Special Procedure Submittals:
 - a. Submit notification to OWNER and ENGINEER at least 14 days before readiness to begin system checkout. Schedule system checkout on dates agreed to by OWNER and ENGINEER.
 - b. Submit written procedure for system checkout to ENGINEER three months prior to starting system checkout. Three months prior to starting system checkout submit written procedure for start-up to ENGINEER.
 - 4. Field Quality Control Submittals:
 - a. Field calibration reports.
 - b. Field testing reports.
 - 5. Supplier's Reports:
 - a. Installation inspection and check-out report.
 - b. Submit written report of results of each visit to Site by Supplier's service technician, including purpose and time of visit, tasks performed, and results obtained. Submit within two days of completion of visit to the Site.
 - 6. Qualifications Statements:
 - a. Supplier.
 - b. Manufacturer, when required by ENGINEER.
- C. Closeout Submittals: Submit the following:
- 1. Operations and Maintenance Data:
 - a. Submit in accordance with Section 01 78 23, Operation and Maintenance Data.
 - b. Include complete up-to-date system software documentation. Provide hardcopy and electronic copies.

- c. Include acceptable test reports, maintenance data and schedules, description of operation, wiring diagrams, and list of spare parts recommended for one year of operation with current price list.
- 2. Record Documentation:
 - a. Prepare and submit record documents in accordance with Section 01 78 39, Project Record Documents.
 - b. Revise all system Shop Drawing submittals to reflect as-built conditions in accordance with the following.
 - 1) Two copies of each revised Shop Drawings and documentation to replace out-dated drawings and documentation contained in operation and maintenance manuals. Submit half-size black line drawings for each drawing larger than 11 inches by 17 inches. Include specific instructions for out-dated drawing removal and replacement with record documents submittal.
 - 2) Half-size black line prints of wiring diagrams applicable to each control panel shall be placed in clear plastic envelopes and stored in a suitable print pocket or container inside each control panel.
 - 3) Submit CADD drawings of the point-to-point interconnection wiring diagrams updated to reflect final as-built equipment information and as-installed field installation information.

1.5 STORAGE AND HANDLING

- A. Prior to packaging, each manufacturer or Supplier shall securely attach tag number and instructions for proper field handling and installation to each instrument.
- B. Comply with Section 01 65 00, Product Delivery Requirements, and Section 01 66 00, Product Storage and Handling Requirements.

PART 2 – PRODUCTS

2.1 SYSTEM REQUIREMENTS

- A. Miscellaneous:
 - 1. General:
 - a. Instrumentation components shall be heavy-duty types, constructed for continuous service.
 - b. System shall consist of equipment models currently in production.
 - c. Materials and equipment, including cabling and interconnections, shall be in accordance with Division 26, Electrical, and manufacturer's recommendations, unless indicated otherwise in the Contract Documents.
 - d. Materials and equipment shall, where applicable, be in accordance with UL standards and be so marked and labeled.

2. Logic and control loops shall be fail-safe. Instrumentation components shall return automatically to accurate measurement within 15 seconds upon restoration of power after power failure and when transferred to standby power supply.
3. Field-mounted instruments and system components shall be constructed for use in humid and corrosive service conditions. Field-mounted instrument enclosures, junction boxes and appurtenances shall have NEMA rating appropriate for hazardous rating requirements shown or indicated on Electrical Drawings, instrument data sheets, and elsewhere in the Contract Documents.
4. Miscellaneous hardware such as fittings, fasteners, and screws, be Type 316 stainless steel or other appropriate material to prevent galvanic reactions, and shall be suitable for service intended. Piping stands shall be provided for fastening instruments as required. Provide threaded pipe stands with flange bolted to slab. Use carbon steel piping and flanges painted in accordance with Section 09 91 00, Painting.
5. Field-mounted instruments shall be tagged with equipment number and nomenclature indicated in the Contract Documents; if not so indicated, tag in accordance with approved Shop Drawings.
6. Coordinate ranges and scales specified in the Contract Documents with manufacturer of the equipment actually furnished for operability over the intended range. Complete the coordination prior to submitting Shop Drawings to ENGINEER.
7. Treat field-mounted devices with anti-fungus spray.
8. Protect field-mounted devices from exposure to high and freezing temperatures to provide complete operability under the environmental conditions indicated in the Contract Documents.

B. Environmental Conditions:

1. Provide control system suitable for continuous operation under the following conditions:
 - a. Outdoor Instruments:
 - 1) Ambient Temperature: -15 degrees F to 120 degrees F.
 - 2) Relative Humidity: 100 percent, maximum.

2.2 PROCESS TAPS, SENSING LINES, AND ACCESSORIES

A. Pressure Tap Sensing Lines and Accessories for Pressure Gauges and Pressure Switches:

1. For Process Sensing Taps in Ductile Iron, Steel and Stainless Steel Piping Systems:
 - a. Material and Fittings: Type 304 stainless steel pipe, ASTM A312; and threaded fittings and adapters, ASTM A403.
 - b. Sizes: 1-inch diameter minimum for main sensing piping and 1/4-inch diameter gauge and switch connections.

- c. Pressure Rating: Equal to or greater than the applicable system test pressure as specified in the Contract Documents.
- d. Accessories:
 - 1) For applications requiring diaphragm seals, provide separate 1/4-inch diameter threaded Type 316 stainless steel ball valve for seal process side shutoff.

2.3 DATA SHEETS –PRIMARY SENSORS AND FIELD INSTRUMENTS

A. General:

- 1. Primary sensors and field instruments shall be in accordance with the “data sheets” included in Part 3 of this specification.
- 2. Do not fabricate, ship, or assemble instruments and devices in panels until required Shop Drawings and other submittals required for fabrication are approved or accepted as required.

2.4 IDENTIFICATION

A. Instrument Tagging:

- 1. Headings on the instrument index in the Contract Documents have the following meaning:
 - a. “TAG” is divided into two sections. The first seven to nine alphanumeric characters represent the OWNER’s equipment number and the remaining characters comply with ISA Standard S5.1.
 - b. “DESCRIPTION/LOCATION” is an explanation of instrument function and location.
 - c. “RANGE/SET POINT” is the limit for the specified units of the instrument and set point is the precise value within the instrument’s range.
 - d. “SPEC REF” is the paragraph reference in the Specifications where the instrument’s requirements are specified.
 - e. “DRAWING NO.” indicates the Drawing where the device is shown or indicated.
 - f. “REMARKS” contains specific notes relative to the instrument.

B. Input/Output List Identification:

- 1. I/O point list contains information required to configure PLC I/O interface hardware, and to indicate range conversion or signal functions.
- 2. “POINT NUMBER” is an alphanumeric character string. For example, for the point “MP-FI-806-0123” the following apply:
 - a. The first two characters (MP) refer to the specific plant area (MP = Main Pump, for example).
 - b. The third character is the functional identifier and conforms with ANSI/ISA S5.1. In the example, “F” represents flow.

- c. The fourth (and sometimes fourth and fifth) alphabetical character (I) is the function identifier. In the example, the “I” represent indication input.
 - d. The first three-digit number (806) identifies the P&ID number.
 - e. The next four-digit number (0123) identifies the loop or field device.
 - f. Suffix, where required, is used for distinguishing between similar variables.
3. “DESCRIPTION” is an alphanumeric character string up to 40 characters in length. Points described as “SPARE” indicate pre-wired I/O.
 4. “SIGNAL TYPE” is one of the following:
 - a. AI indicates analog input.
 - b. DI indicates discrete input.
 - c. PI indicates pulse input.
 - d. AO indicates analog output.
 - e. DO indicates momentary, maintained or latched discrete output.
 - f. FB indicates foundation field bus.
 - g. PB indicates profi bus.
 - h. MB indicates Modbus.
 - i. DN indicates device net.

C. ISA Identification

1. A = Analytical.
2. B = Burner, Combustion.
3. C = Cooling (Cooling Condenser).
4. D = Dissolved.
5. E = Voltage.
6. F = Flow.
7. G = Intrusion.
8. H = Hand.
9. I = Current.
10. J = Power.
11. K = Time.
12. L = Level.
13. M = Manual.
14. N = UNDEFINED.
15. O = Overload.
16. P = Pressure.
17. Q = Communication.
18. R = Reverse.
19. S = Speed, Frequency.
20. T = Temperature.
21. U = Universal (Common).
22. V = Vibration.
23. W = Torque (Weight or Force).
24. X = Critical (Emergency).
25. Y = Event, State or Presence.

26. Z = Position, Dimension.

D. Function Identifier:

1. A = Alarm.
2. B = UNDEFINED.
3. C = Control.
4. D = Differential.
5. E = Element.
6. F = Failure.
7. G = UNDEFINED.
8. H = High.
9. I = Indication.
10. J = UNDEFINED.
11. K = Factor.
12. L = Low.
13. M = Mode.
14. N = Normal.
15. O = Oxygen.
16. P = UNDEFINED.
17. Q = Quantity.
18. R = Rotation.
19. S = Switch.
20. T = Timer.
21. U = UNDEFINED.
22. V = Slow (output).
23. W = Slow (input).
24. X = Selector Switch (input).

2.5 PROCESS CONTROL DESCRIPTIONS

A. Interlocks

1. General items applying to each alarm circuit shall include a display of condition at the OIT and manual reset of condition at the OIT.
 - a. No Flow circuit alarm if high service pump discharge valve limit switch indicates check valve closed after pump motor reaches a predetermined speed after an adjustable time delay and shut down the pump until the alarm has been rest in SCADA.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine conditions under which the Work will be installed and notify ENGINEER in writing of conditions detrimental to proper and timely completion

of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. Environmental Requirements:
 - 1. Do not install instruments in areas where construction may cause instrument to be damaged, without providing adequate protection for said instrument.

- B. Installation of Instrumentation:
 - 1. Secure field-mounted instruments to stands or brackets in accordance with manufacturer's recommendations, approved or accepted (as applicable) submittals, and the Contract Documents.
 - 2. Locate sensors where shown on the Drawings. Confirm exact locations in the field with ENGINEER.
 - 3. Install all devices so that devices are readily accessible for service and do not cause potential hazards.

- C. Services and Operator Instructions:
 - 1. Provide repairs or replacement of defective materials, equipment or workmanship, including with respect to equipment, the services of factory-trained servicemen.
 - 2. In addition to the calibration required for check-out, provide two additional calibrations on all instruments. The first re-calibration shall be approximately six months after acceptance of the system, and the second shall be approximately eleven months after acceptance. As part of each calibration, provide two copies of the calibration sheets, a detailed list of deficiencies (should any be found), and a statement that the entire system is in proper operation and condition (except for the deficiencies noted) and shall be turned over to the OWNER.

3.3 FIELD QUALITY CONTROL

- A. Tests and Inspections: Field-verify calibration and performance of each instrument prior to start-up of the associated equipment, and document on a separate sheet for each.
 - 1. For each calibration certification sheet, include the following information:
 - a. Project name.
 - b. Tag number and description.
 - c. Manufacturer.
 - d. Model and serial number.
 - e. Date, time and person who performed calibration.
 - f. Calibration data to include.
 - 1) Input, output, and error at 0, 25, 75, and 100 percent of span for analog instruments.

- 2) Switch setting, contact action and deadband, if applicable, for discrete elements.
 - g. Space for comments.
 - h. Signature and date.
- 2. System Check-Out and Start-Up Responsibilities:
 - a. CONTRACTOR shall retain the services of the System Supplier to supervise and/or perform check-out and start-up of all system components. As part of these services, the System Supplier shall include for those equipment items not manufactured by him the services of an authorized manufacturer's representative to check the equipment installation and place the equipment in operation. The manufacturer's representative shall be thoroughly knowledgeable about the installation, operation and maintenance of the equipment.
 - b. Check and approve the installation of all instrumentation and control system components and all cable and wiring connections between the various system components prior to placing the various processes and equipment into operation.
 - c. Conduct a complete system checkout and adjustment, including calibration of all instruments, tuning of control loops, checking operation functions, and testing of final control actions. When there are future operational functions included in the Work, they should be included in the system checkout. All problems encountered shall be promptly corrected to prevent any delays in start-up of the various unit processes.
 - d. CONTRACTOR shall provide all test equipment necessary to perform the testing during system checkout and start-up.
 - e. CONTRACTOR and System Supplier shall make any required changes, adjustments or replacements for operation, monitoring and control of the various processes and equipment necessary to perform the functions intended at no additional cost to the OWNER. These changes or adjustments shall be documented by the CONTRACTOR and submitted to the ENGINEER as part of the Installation Inspection Report described in Paragraph g. below.
 - f. CONTRACTOR shall furnish to the ENGINEER certified calibration reports for field instruments specified in this Section as soon as calibration is completed.
 - g. CONTRACTOR shall furnish ENGINEER an Installation Inspection Report certifying that all equipment has been installed correctly and is operating properly. The report shall be signed by authorized representatives of both CONTRACTOR and the System Supplier.
 - h. Instrumentation and Control System Field Test:
 - 1) Following the instrumentation and control system checkout and initial operation, CONTRACTOR, under the supervision of the System Supplier, shall perform a complete system test to verify that all equipment and programmed software is operating properly as a fully integrated system, and that the intended instrumentation and

control functions are fully implemented and operational. Any defects or problems found during the test shall be corrected by CONTRACTOR and then retested to demonstrate proper operation.

- 2) Following demonstration of all system functions, the instrumentation and control system, including field sensors/transducers and instruments shall be running and fully operational for a continuous 48 hour period.

3.4 SUPPLEMENTS

- A. The supplements listed below, following the “End of Section” designation, are part of this Specification section.
- B. Data Sheets – Primary Sensors and Field Instruments.

Article	Description	Page
B.1	Analyzer - Ammonia	Not Used
B.2	Analyzer - Ammonia Leak Detector	Not Used
B.3	Analyzer - Ammonium	Not Used
B.4	Analyzer - Chlorine	Not Used
B.5	Analyzer - Composite Sampler	Not Used
B.6	Analyzer - Conductivity	Not Used
B.7	Analyzer - Discrete Continuous Sampler	Not Used
B.8	Analyzer - Dissolved Oxygen	Not Used
B.9	Analyzer - Gas Monitoring System	Not Used
B.10	Analyzer - Gas Monitor (Portable)	Not Used
B.11	Analyzer - Nitrate	Not Used
B.12	Analyzer - Particle Counter (Portable)	Not Used
B.13	Analyzer - pH	Not Used
B.14	Analyzer - Phosphate	Not Used
B.15	Analyzer - Suspended Solids	Not Used
B.16	Analyzer - Total Residual Chlorine	Not Used
B.17	Analyzer - Turbidity	Not Used
B.18	Current Transformer	Not Used
B.19	Potential Transformer	Not Used
B.20	Flow - Leopold-Lagco Flume	Not Used
B.21	Flow - Palmer Bowlus Flume	Not Used
B.22	Flow - Parshall Flume	Not Used
B.23	Flow Element - Insert Flow Tube	Not Used
B.24	Flow Element - Orifice Plate	Not Used
B.25	Flow Element - Pitot Tube	Not Used
B.26	Flow Element - Venturi Flow Tube	Not Used
B.27	Flow Indicator - Rotameter	Not Used
B.28	Flow Meter - Area Velocity Type	Not Used
B.29	Flow Meter - Magnetic Flow Tube	Not Used

B.30	Flow Meter - Propeller Type	Not Used
B.31	Flow Meter - Thermal Mass Type	Not Used
B.32	Flow Meter (Ultrasonic) - Doppler Clamp-On Type	Not Used
B.33	Flow Meter (Ultrasonic) - Transit Time Multi-Channel	Not Used
B.34	Flow Meter (Ultrasonic) - Transit Time Open Channel	Not Used
B.35	Flow Meter (Ultrasonic) - Transit Time Clamp-On Type	Not Used
B.36	Flow Meter - Ultrasonic (Velocity) Type	Not Used
B.37	Flow Meter - Venturi	Not Used
B.38	Flow Switch - Differential Pressure Type	Not Used
B.39	Flow Switch - In Line	Not Used
B.40	Flow Switch - Swinging Vane Type	Not Used
B.41	Flow Switch - Thermal Mass Type	Not Used
B.42	Flow Switch - Ultrasonic Type	Not Used
B.43	Level Sight Gauge System	Not Used
B.44	Level Transmitter - Admittance Type	Not Used
B.45	Level Transmitter - Bubbler Type	Not Used
B.46	Level Transmitter - Bubbler Type (Pneumatic Components)	Not Used
B.47	Level Transmitter - Bubbler Type Packaged System	Not Used
B.48	Level Transmitter - Diaphragm Seal Type	Not Used
B.49	Level Transmitter - Digester Cover Position	Not Used
B.50	Level Transmitter - Filter Bed Expansion Monitor	Not Used
B.51	Level Transmitter - Radar Type	Not Used
B.52	Level Transmitter - Sludge Blanket Detector	Not Used
B.53	Level Transmitter - Submersible Pressure Type	Not Used
B.54	Level Transmitter - Ultrasonic Type	Not Used
B.55	Level Switch - Admittance Type (Multipoint)	Not Used
B.56	Level Switch - Admittance Type (Single Point)	Not Used
B.57	Level Switch - Conductance Type	Not Used
B.58	Level Switch - Float Type (Multipoint)	Not Used
B.59	Level Switch - Float Type (Single Point)	Not Used
B.60	Level Switch - Guided Float Type	Not Used
B.61	Level Switch - Reed Type	Not Used
B.62	Level Switch - Ultrasonic Type	Not Used
B.63	Level Switch - Vibrating Fork Type	Not Used
B.64	Level Switch - Wet Floor Detection Type	Not Used
B.65	Diaphragm Seal	Not Used
B.66	Differential Pressure Indicator	Not Used
B.67	Differential Pressure Manometer	Not Used
B.68	Differential Pressure Transmitter	Not Used
B.69	Differential Pressure Switch	Not Used
B.70	Pressure Element - In-Line Type	Not Used
B.71	Pressure Sensor - In-Line Type	Not Used
B.72	Pressure Gauge - Bellows Type	Not Used
B.73	Pressure Gauge - Bourdon Type	15
B.74	Pressure Indicating Switch	Not Used
B.75	Pressure Switch	16
B.76	Pressure Transmitter	Not Used
B.77	Temperature Element - RTD Type	Not Used
B.78	Temperature Gauge	Not Used

B.79	Thermometer	Not Used
B.80	Temperature Transmitter - RTD Type	Not Used
B.81	Temperature Transmitter - Thermocouple	Not Used
B.82	Temperature Switch	Not Used
-	REFERENCES: Materials Compatibility and Area Classification Charts	17

C. Instrument List.

D. Input/Output List.

++ END OF SECTION ++

DATA SHEETS - PRIMARY SENSORS AND FIELD INSTRUMENTS

PRODUCT	Pressure Switch			SHEET 1 OF 1
PROJECT	RO WTP HIGH SERVICE PUMP REPLACEMENT			SPEC. NO. 40 60 05 - B.75
TAG NO. Ref. Dwg. No.:	1	PS - 5101 M-01, I-02	PS - 5102 M-01, I-02	PS - 5103 M-01, I-02
PROCESS				
Location:	2	High Service Pump Station	High Service Pump Station	High Service Pump Station
Service:	3	High Service Pump Discharge	High Service Pump Discharge	High Service Pump Discharge
Vessel / Line No.:	4	N/A	N/A	N/A
Fluid:	5	Finished Water	Finished Water	Finished Water
Temp. Min/Max:	6	50 - 80 degrees F	50 - 80 degrees F	50 - 80 degrees F
Press. Min/Max:	7	0 - 100psi	0 - 100psi	0 - 100psi
Velocity Min/Max:	8	0 - 5 ft/sec	0 - 5 ft/sec	0 - 5 ft/sec
PERFORMANCE				
Range:	9	200psi	200psi	200psi
Temperature:	10	-4 to 140 degrees F.	-4 to 140 degrees F.	-4 to 140 degrees F.
Repeatability:	11	±1% of range.	±1% of range.	±1% of range.
Deadband:	12	1-3	1-3	1-3
SENSOR				
Type:	13	Diaphragm/Piston Pressure Sensor.	Diaphragm/Piston Pressure Sensor.	Diaphragm/Piston Pressure Sensor.
Element:	14	Transducer.	Transducer.	Transducer.
Diaphragm Seal:	15	(See Notes, Line 35).	(See Notes, Line 35).	(See Notes, Line 35).
Capillary Tubing:	16	316 S.S. Capillary to extend from process connection to switch.	316 S.S. Capillary to extend from process connection to switch.	316 S.S. Capillary to extend from process connection to switch.
Mounting:	17	Integral Mount to Switch.	Integral Mount to Switch.	Integral Mount to Switch.
Area Classification:	18	Not Applicable	Not Applicable	Not Applicable
Additional Features:	19			
SWITCH				
Type:	20	Snap Action Switch.	Snap Action Switch.	Snap Action Switch.
Power Supply:	21	120 VAC	120 VAC	120 VAC
Relays:	22	SPDT, snap action.	SPDT, snap action.	SPDT, snap action.
Rating:	23	Not less than 10A at 120 VAC	Not less than 10A at 120 VAC	Not less than 10A at 120 VAC
Switch Action:	24	Switch Opens/Closes at predefined setpoint(s); Normally Closed contact.	Switch Opens/Closes at predefined setpoint(s); Normally Closed contact.	Switch Opens/Closes at predefined setpoint(s); Normally Closed contact.
Setpoints:	25	Match existing	Match existing	Match existing
Enclosure/Housing:	26	NEMA 4X; Epoxy painted; Die-cast low copper aluminum alloy housing.	NEMA 4X; Epoxy painted; Die-cast low copper aluminum alloy housing.	NEMA 4X; Epoxy painted; Die-cast low copper aluminum alloy housing.
Mounting:	27	Pipe Stand Mount; External Mounting Lugs; 316 S.S. Hardware.	Pipe Stand Mount; External Mounting Lugs; 316 S.S. Hardware.	Pipe Stand Mount; External Mounting Lugs; 316 S.S. Hardware.
Connections:	28	Process Conn.: 1/4 inch NPT; Electrical Conn.: 3/4 inch NPT.	Process Conn.: 1/4 inch NPT; Electrical Conn.: 3/4 inch NPT.	Process Conn.: 1/4 inch NPT; Electrical Conn.: 3/4 inch NPT.
Area Classification:	29	Not Applicable	Not Applicable	Not Applicable
Additional Features:	30	Set/Reset Point Adjustment (See Notes, Line 34).	Set/Reset Point Adjustment (See Notes, Line 34).	Set/Reset Point Adjustment (See Notes, Line 34).
NOTES				
General:	31	All wetted parts shall be compatible with the process fluid. Refer to Materials Compatibility Chart.		
Function:	32	Pressure Switch shall sense gauge or absolute pressure and open or close a contact when the pressure reaches the specified trip point.		
Installation:	33	Refer to Contract Drawing Installation Details and manufacturer's recommendations for installation.		
Set/Reset Point:	34	Provide Set and Reset Point adjustable external adjusting nuts and pressure setting scales in psi. Provide metal cover with gasket for adjusting nuts.		
Diaphragm Seal:	35	A diaphragm seal is required for all mediums except air or potable water. Diaphragm material shall be compatible with the process fluid. Refer to Diaphragm Seal Data Sheet for requirements.		
	36			
	37			
	38			
	39			
MANUFACTURE				
Manufacturer:	40	Ashcroft, Cat. No. B420B XFSNH	No Equal	

DATA SHEETS - PRIMARY SENSORS AND FIELD INSTRUMENTS

REFERENCES: Materials Compatibility and Area Classification Charts

MATERIALS COMPATIBILITY CHART

<u>Process Fluid</u>	<u>Diaphragm</u>	<u>O-Ring</u>	<u>Gasket</u>			
Wastewater / Sludge	316 SS	Buna-N	Buna-N			
Potassium	Carpenter 20	Viton	Viton			
Sodium Hypochlorite	Teflon	Teflon	Teflon			
Polymer	316 SS	Buna-N	Buna-N			
Phosphoric Acid	316 SS	Buna-N	Buna-N			
Alum	316 SS	Teflon	Teflon			
Chlorine Gas	Teflon	Teflon	Teflon			
Chlorine Solution	Teflon	Teflon	Teflon			
Sodium Chloride	Teflon	Teflon	Teflon			
Ammonia	316 SS	Teflon	Teflon			
Methanol	316 SS	Teflon	Teflon			
Carbon	316 SS	Buna-N	Buna-N			
Lime	316 SS	Teflon	Teflon			
Ferric Chloride	Teflon	Teflon	Teflon			
Caustic Soda	Teflon	Teflon	Teflon			
Sodium Bisulfite	Teflon	Teflon	Teflon			
Sodium Hydroxide	Teflon	Teflon	Teflon			
Scrubber Solution	Teflon	Teflon	Teflon			
Fluoride	Hastelloy C	Viton	Viton			
Phosphate	316 SS	Teflon	Teflon			

AREA CLASSIFICATION CHART

<u>Location</u>	<u>Description</u>
Class 1	Class I locations are those in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures.
Class 1, Division 1	A location (1) In which ignitable concentrations of flammable gases or vapors can exist under normal operating conditions; or (2) In which ignitable concentrations of such gases or vapors may exist frequently because of repair or maintenance operations or because of leakage; or (3) In which breakdown or faulty operation of equipment or processes might release ignitable concentrations of flammable gases or vapors and might also cause simultaneous failure of electrical equipment in such a way as to directly cause the electrical equipment to become a source of ignition.
Class 1, Division 2	A location (1) In which volatile flammable liquids or flammable gases are handled, processed, or used, but in which the liquids, vapors, or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems, or in case of abnormal operation of equipment; or (2) In which ignitable concentrations of gases or vapors are normally prevented by positive mechanical ventilation and might become hazardous through failure or abnormal operation of the ventilating equipment; or (3) That is adjacent to a Class I, Division 1 location, and to which ignitable concentrations of gases or vapors might occasionally be communicated unless such communication is prevented by adequate positive-pressure ventilation from a source of clean air and effective safeguards against ventilation failure are provided.
Class 2	Class II locations are those that are hazardous because of the presence of combustible dust.
Class 2, Division 1	A location (1) In which combustible dust is in the air under normal operating conditions in quantities sufficient to produce explosive or ignitable mixtures; or (2) Where mechanical failure or abnormal operation of machinery or equipment might cause such explosive or ignitable mixtures to be produced, and might also provide a source of ignition through simultaneous failure of electric equipment, through operation of protection devices, or from other causes; or (3) In which Group E combustible dusts may be present in quantities sufficient to be hazardous.
Class 2, Division 2	A location (1) In which combustible dusts due to abnormal operations may be present in the air in quantities sufficient to produce explosive or ignitable mixtures; or (2) Where combustible dust accumulations are present but are normally insufficient to interfere with the normal operation of electrical equipment or other apparatus, but could as a result of infrequent malfunctioning of handling or processing equipment become suspended in the air; or (3) In which combustible dust accumulations on , in, or in the vicinity of the electrical equipment could be sufficient to interfere with the safe dissipation of heat from electrical equipment, or could be ignitable by abnormal operation or failure of electrical equipment.
Class 3	Class III locations are those that are hazardous because of the presence of easily ignitable fibers or filings, but in which such fibers or filings are not likely to be in suspension in the air in quantities sufficient to produce ignitable mixtures.
Class 3, Division 1	A location in which easily ignitable fibers or materials producing filings are handled, manufactured or used.
Class 3, Division 2	A location in which easily ignitable fibers are stored or handled (except in the process of manufacture).

* Source: NEC 2005 Edition - Article 500

C - INSTRUMENT LIST						
TAG NUMBER / LOOP NUMBER	LOOP DESCRIPTION	INSTRUMENT LOCATION	CALIBRATED RANGE	SETPOINT	LINE SIZE (INCHES)	SPEC SECTION
PI-5101	High Service Pump No. 1 Discharge Pressure Gauge	High Service Pump No. 1 Discharge	0 - 200psi	N/A	1/4"	40 60 05 - 3.4.B.73
PI-5102	High Service Pump No. 2 Discharge Pressure Gauge	High Service Pump No. 2 Discharge	0 - 200psi	N/A	1/4"	40 60 05 - 3.4.B.73
PI-5103	High Service Pump No. 3 Discharge Pressure Gauge	High Service Pump No. 3 Discharge	0 - 200psi	N/A	1/4"	40 60 05 - 3.4.B.73
PSH-5101	High Service Pump No. 1 High Discharge Pressure Switch	High Service Pump No. 1 Discharge	200psi	TBD	1/4"	40 60 05 - 3.4.B.75
PSH-5102	High Service Pump No. 2 High Discharge Pressure Switch	High Service Pump No. 2 Discharge	200psi	TBD	1/4"	40 60 05 - 3.4.B.75
PSH-5103	High Service Pump No. 3 High Discharge Pressure Switch	High Service Pump No. 3 Discharge	200psi	TBD	1/4"	40 60 05 - 3.4.B.75
ZSC-5101	High Service Pump No. 1 No Flow Switch	High Service Pump No. 1 Check Valve	N/A	Valve Closed	N/A	M-02
ZSC-5102	High Service Pump No. 2 No Flow Switch	High Service Pump No. 2 Check Valve	N/A	Valve Closed	N/A	M-02
ZSC-5103	High Service Pump No. 2 No Flow Switch	High Service Pump No. 3 Check Valve	N/A	Valve Closed	N/A	M-02

D - Input/Output List

Description	ISA Tag	Type	Signal	Field Wiring	
				Signal Source	Signal Destination
High Service Pump No. 1 High Discharge Pressure	PAH-5101	DI	Form C	PSH-5101	HSP No. 1 VFD Interface Panel
High Service Pump No. 1 Low Discharge Flow	ZIC-5101	DI	Form C	ZSC-5101	PLC-2
High Service Pump No. 2 High Discharge Pressure	PAH-5102	DI	Form C	PSH-5102	HSP No. 2 VFD Interface Panel
High Service Pump No. 2 Low Discharge Flow	ZIC-5102	DI	Form C	ZSC-5102	PLC-2
High Service Pump No. 3 High Discharge Pressure	PAH-5103	DI	Form C	PSH-5103	HSP No. 3 VFD Interface Panel
High Service Pump No. 3 Low Discharge Flow	ZIC-5103	DI	Form C	ZSC-5103	PLC-2
High Service Pump Station Bypass Low Flow	ZIC-5106	DI	Form C	ZSC-5106	PLC-2

Abbreviations:

Form C Dry Contact Form C*
 LCP Local Control Panel
 DI Discrete Input
 DO Discrete Output
 AI Analog Input
 AO Analog Output

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SECTION 43 21 13.33

CENTRIFUGAL VERTICAL LINE SHAFT PUMPS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified and required to furnish and install vertical line shaft pumps complete and operational.
2. Included are pump, motor, coupling, base, drive, and all appurtenances.
3. Pump shall be installed on existing suction barrel and CONTRACTOR shall replace discharge head with new pumping components to include, but not be limited to that shown below to provide pumps complete and operational:
 - a. Pump bowls, impellers and bearings.
 - b. Pump shaft and discharge column.
 - c. Line shafts and bearings.
 - d. Motor and associated appurtenances indicated in the Contract Documents.
4. Re-bowling the existing discharge heads will not accommodate the elimination of shaft critical speeds when used on the existing variable speed drives. Existing discharge head, discharge elevations shall be maintained on the new fabricated steel discharge heads.

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate installation of items that must be installed with or before centrifugal vertical line shaft pump Work.

C. Related Sections:

1. Section 09 91 00, Painting.
2. Section 40 60 05, Instrumentation and Control for Process Systems.
3. Section 40 05 93, Common Motor Requirements for Process Equipment.

1.2 REFERENCES

A. Standards referenced in this Section are:

1. American Bearing Manufacturers Association (ABMA).
2. American National Standards Institute (ANSI).
3. ASTM A48/A48M, Specification for Grey Iron Castings.
4. American Water Works Association (AWWA).
5. ANSI/HI 2.3, Vertical Pumps for Design and Application.

6. ANSI/HI 2.4, Vertical Pumps for Installation, Operation, and Maintenance.
7. ANSI/HI 2.6, Vertical Pump Tests.
8. ANSI/HI 9.1-9.5, Pumps – General Guidelines.
9. ANSI/HI 9.6.2, Centrifugal and Vertical Pumps for Allowable Nozzle Loads.
10. ANSI/HI 9.6.4, Centrifugal and Vertical Pumps for Vibration Measurements and Allowable Values.
11. ANSI/HI 9.6.5, Centrifugal and Vertical Pumps for Condition Monitoring.
12. ANSI/HI 9.8, Pump Intake Design.
13. ANSI/NSF 61 Drinking Water Components – Health Effects.
14. AWS D1.1/D1.1M, Structural Welding Code-Steel.
15. IEEE 85, Airborne Sound Measurements- Rotating Electrical Machinery.
16. National Electrical Manufacturers' Association (NEMA).

1.3 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 1. Manufacturer shall have a minimum of five years experience producing substantially similar equipment to that specified in this Section and shall have their own fabrication shop that will allow for manufacture of the new pump components. Manufacturer shall be able to document at least five installations where existing suction barrel were retrofitted with new pump components of similar size and in satisfactory operation for at least five years.
- B. Welding Qualifications: Equipment manufacturer's shop welds and welding procedures and personnel shall be qualified and certified per AWS D1.1/D1.1M.
- C. Component Supply and Compatibility:
 1. Obtain all equipment included in this Section regardless of component manufacturer from a single centrifugal vertical line shaft pump manufacturer.
 2. The equipment manufacturer shall prepare, or review and approve all Shop Drawings and other submittals for components furnished under this Section.
 3. Components shall be specifically constructed for specified service conditions and be integrated into overall assembly by centrifugal vertical line shaft pump manufacturer.

1.4 SUBMITTALS

- A. Action Submittals: Submit the following:
 1. Shop Drawings:
 - a. Manufacturer's literature, illustrations, specifications, paint certification and engineering data including: dimensions, materials, size, weight, and part lists for all components in sufficient detail to allow an item by item comparison with the Contract Documents.
 - b. Provide drawings showing new pump components are compatible with existing suction barrel and pump support. Drawings shall show

dimensions and calculations related to discharge head and provide confirmation that the discharge head and suction barrel have structural capacity to support new equipment and motor. Pump manufacturer is solely responsible for assuring proper fit.

- c. Performance data and curves showing overall pump efficiencies, required net positive suction head, flow rate, head, brake horsepower, motor horsepower, speed, and shut-off head. Curves shall range from minimum flow to shut-off head at full speed and all speed curves specified. For variable speed units, curves shall have at least five speeds plotted between maximum and minimum rpm. Provide data on pump head losses to include entrance, bowl, column, and discharge head losses.
 - d. Minimum submergence required over suction bell at minimum head listed in service conditions in Part 2 of this Specification.
 - e. Pump shall exhibit no thrust along its operational curve.
 - f. Upthrust at starting.
 - g. Moment of Inertia Wr^2 of pump.
 - h. Impeller diameter.
 - i. Provide motor test reports for furnished motors including running light current, locked rotor current, winding resistance measurement, high potential test, bearing inspection, and efficiency at 1/2, 3/4, and full load.
2. Shop Drawings:
 - a. Drawings of the products, including fabrication methods, assembly, accessories, installation details, dimensions, and wiring diagrams.
 3. Samples:
 - a. Paint color samples for finish on pumps and motors. Color samples shall conform to Section 09 91 00, Painting.
 4. Delegated Design Submittals:
 - a. Analysis and calculations by a qualified specialist for critical speed of pump and motor shaft.
 5. Testing Plans, Procedures and Testing Limitations:
 - a. Proposed shop test procedures and field test procedures, and location of the shop tests.
 - b. Location of nearest permanent service headquarters of pump manufacturer to the Site.

B. Informational Submittals: Submit the following:

1. Certificates:
 - a. Provide welding certifications.
2. Source Quality Control Submittals:
 - a. Shop tests. Provide prior to shipment from factory.
 - b. Provide a statement regarding compliance with the specified bowl efficiency at design point listed in the service conditions in Part 2 of this Section.
3. Site Quality Control Submittals:
 - a. Field operating tests.

4. Manufacturer's Instructions: Submit manufacturer's instructions and recommendations for:
 - a. Storage.
 - b. Handling.
 - c. Installation.
 5. Manufacturer's Reports:
 - a. Submit a written report of the results of each visit by a manufacturer's serviceman, including purpose and time of visit, tasks performed and results obtained.
 6. Qualifications Statements:
 - a. Submit qualifications data as specified in the Quality Assurance section.
- C. Closeout Submittals: Submit the following:
1. Operation and Maintenance Data:
 - a. Submit complete operation and maintenance manuals, including copies of test reports, maintenance data, and schedules, description of operation, and spare parts information.
 - b. Furnish operation and maintenance manuals per Section 01 78 23, Operations and Maintenance Data.
 2. Warranty Documentation:
 - a. Provide a copy of the manufacturer's standard warranty for parts and labor.
- D. Maintenance Materials Submittals: Furnish the following:
1. Spare Parts:
 - a. Provide tools and spare parts as specified in the Maintenance article of this Specification.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Packing, Shipping, Handling and Unloading:
1. Prior to shipping, completely inspect products to assure that components are complete and comply with all requirements. Box or crate products as required to prevent damage during shipment. Protect machined surfaces and matching connections to prevent damage.
 2. Deliver products to Site to ensure uninterrupted progress of the Work. Deliver products in ample time to prevent delay of the Work.
 3. Inspect all boxes, crates, and packages upon delivery to Site and notify ENGINEER in writing of loss or damage to products. Promptly remedy loss and damage to new condition per manufacturer's instructions.
 4. Conform to Section 01 65 00, Product Delivery Requirements.

- B. Storage and Protection:
 - 1. Keep all products off ground using pallets, platforms, or other supports. Protect steel, packaged materials, and electronics from corrosion and deterioration.
 - 2. Conform to Section 01 66 00, Product Storage and Handling Requirements.

1.6 MAINTENANCE

- A. Special Tools: Furnish two sets of special tools required for normal operation and maintenance of products furnished.
- B. Extra Materials:
 - 1. Furnish the following spare parts for each centrifugal vertical line shaft pumps furnished under the Contract:
 - a. Complete set of gaskets.
 - b. One complete set of bowl and line shaft bearings for each pump assembly.
 - c. One set of bowl and impeller wear rings for each pump.
 - d. Supply sufficient recommended motor oil and grease for the owner's first oil change.
 - e. Complete set of fasteners, bolts, nuts, pins, keys, and washers that are not of standard manufacture.
 - f. One complete cartridge style mechanical seal for each pump.
 - g. One complete new stuffing/seal box with shaft bearing, gland bolts, gaskets and accessories required to change a pump stuffing box.
 - h. Provide 6-replacement suction barrel O-rings for sealing the pumps to the suction barrels.
 - 2. Furnish and deliver spare parts carefully packed in sturdy containers with clear indelible identification markings. Store spare parts as recommended by manufacturer until transferred to OWNER.
 - 3. Product manufacturer shall provide a list of additional recommended spare parts. List shall describe each part, quantity recommended, and manufacturer's standard unit price for the part.

PART 2 - PRODUCTS

2.1 SERVICE CONDITIONS

- A. Description: Equipment provided shall be suitable for process and service conditions specified in the Contract Documents and shall conform to ANSI/HI 2.3. Pumps shall be designed, constructed, and installed for service intended and shall comply with the service conditions listed below.

- B. Pump's characteristic curve shall rise continuously from minimum head condition to shutoff without dips. Complete pumping unit, consisting of bowl(s), column, pump head, motor, and appurtenances shall be suitable in all respects for continuous, stable performance when operating at each point on pump's characteristic curve in compliance with Hydraulic Institute Standards without cavitation and in accordance with vibration criteria specified herein.
- C. Performance Criteria:
1. Pumps shall comply with the following minimum conditions:

Design Conditions	Pump No. 1
Location	HSP structure
Use	High service drinking water distribution
Fluid Pumped	Drinking water
Number of Pumps Required	3
Number of Stages per Pump	3
* Design Flow (1st design point) (gpm)	2200
* Design Total Head (1st design point) (ft)	200
Minimum Bowl Efficiency at Design (1st design point) (percent)	80%
**Motor (Hp)	150
Max Operating Speed (rpm)	1775
Pump Column Diameter (in)	12
Pump Shaft Minimum Diameter (in)	1.5
Discharge Nozzle Dia. (in)	12
** Available NPSH at Design (ft)	25
*** Flow at 2nd Design Point (gpm)	1000
Total Head at 2nd Design Point (ft)	275
***Head at Zero Flow (ft)	> 350
Type of Lubrication (water or oil)	water
Maximum Liquid Elev. in Suction Well (ft)	11
Minimum Liquid Elevation in Suction Well (ft)	10.3
Elevation of Suction Well Floor (ft)	-4.67
Pump Discharge Centerline Elevation (ft.)	12.08
Fluid Temperature (degrees F)	70
Fluid pH	7
Drive Type	Variable frequency
**** Motor Size (hp)	150
Motor Voltage/Phase/Hertz	460 / 3 / 60

- * At maximum speed. Does not include entrance, pump, column, and discharge head losses.
- ** Required NPSH shall be for size impeller furnished. If impeller is trimmed, provide the curve for the impeller as trimmed.
- *** Flow at the 2nd Design Point total head shall be within ten percent of value specified.
- **** Pump horsepower requirements shall not exceed stated horsepower at all points on pump curve.

2.2 MANUFACTURERS

A. Manufacturers:

1. Provide vertical line shaft pumps of one of the following:
 - a. Peerless Pump.
 - b. Flowserve.
 - c. Pentair – Fairbanks Nijhuis.
 - d. Goulds as represented by Hudson Pump.
 - e. Ruhrpumpen.
2. Provide motors manufactured by one of the following:
 - a. U.S. Motors.
 - b. General Electric.
 - c. Approved equal.

2.3 DETAILS OF CONSTRUCTION

A. Pump Materials and Construction:

1. Pump and wetted components of pumps conveying potable water or water that will be treated to become potable shall conform to ANSI/NSF 61.
2. Pump Base: Provide base of high-grade cast-iron or fabricated steel for mounting driver and supporting pump column. Surface discharge outlet shall be flanged. Flanges shall be ANSI B16.1, Class 125.
 - a. The flanged discharge shall conform to the existing 12” flange location with regard to laying length and elevation above the top surface of the existing suction barrels.
 - b. The discharge head shall have a round, ANSI Flange sized, steel base drilled for the existing bolt circle and size of suction barrel bolt fasteners.
 - c. The new fabricated discharge head shall be designed such that it shall provide for the mounting of the new pump motors with an adjustable spacer coupling between the top of the pump shaft and the solid shaft pump motor.
 - d. The new fabricated steel discharge heads shall be provided with a cast iron, removable seal container / stuffing box that will accommodate a 4-bolt attachment of the required cartridge mechanical seal.
 - e. Provide 316 series stainless steel expanded metal mesh coupling access window guards that shall include PVC edge guards around all edge surfaces of the attached screens.
 - f. Provide a 316 series, stainless steel seal vent line, 1/4”, routed through one of the screen guards and tapped into the top of the round flanged, head base to direct flush flow back to the suction barrels.
 - g. The existing suction barrels are O-Ring sealed and accordingly, the new discharge heads shall be machined flat on the bottom surfaces and accommodate the existing, O-ring sealing system and sizes.

3. Pump Bowls: Castings shall be of close-grained cast-iron smooth and free of casting imperfections, conforming to ASTM A48/A48M.
4. Impellers: Impellers shall be ASTM B-584, C95200, C95800, Bronze, or type 316 stainless steel of enclosed type, statically and dynamically balanced. Securely fasten impeller to shaft with keys, taper bushings, or lock nuts manufactured entirely of 316 series, stainless steel. Impellers shall be adjustable vertically by means of the adjusting nut, which is a part of the spacer coupling mounted between the solid shaft motor and the pump shaft above the seal box. Pump Bowl assembly, impeller performance, shall be selected such that no pump up-thrust shall exhibit anywhere on the entire pump curve, from shut off, to published run-out, without exception.
5. Pump Shafts: Shall be ASTM A582, Type 416 stainless steel not less than 12 percent chromium, heat-treated, ground, and polished. Shaft diameter shall be sized for total axial thrust and weight of all rotating parts supported by shaft and horsepower transmitted. Maximum combined shear stress shall not exceed 30 percent of elastic limit in tension or be more than 18 percent of ultimate tensile strength of shafting material.
6. Line Shafts: Line shafts shall be of AISI type 416 stainless steel. Surface finish shall not exceed RMS 40. Line shafts shall be furnished in lengths not greater than ten feet with ends faced squarely for perfect alignment after installation. Shafting shall be coupled with AISI type 316 series stainless steel couplings, designed with a safety factor of 1.5 times shaft safety factor and be left-hand thread to tighten during pump operation. Provide line-shafts with factory-applied wear sleeves applied to the line shaft bearing areas.
7. Line Shaft Bearings: Line shaft bearings shall be water lubricated and mounted in bearing retainers held in position in column couplings by means of butted ends of column pipes. Locate bearings at intervals of no more than five feet. Conform to applicable standards. Line-shaft bearings shall be fluted, cutlass type elastomer type, manufactured from EPDM.
8. Discharge Column Pipe: Column pipe shall be standard inside diameter, at least 12-inch diameter, have a wall thickness in accordance with AWWA standard and shall be a minimum of 0.375" for mechanical stiffness with variable speed operation. Pipe ends shall be flanged and shall be connected to ensure proper alignment when assembled. Friction pipe loss shall not exceed five feet of head per 100 feet of length, at pump's rated capacity.
 - a. The pump column, shafting, and bearing configuration must be constructed in such a manner that no critical speed vibrations will appear in the entire speed range of the motor and pump. To that end, sufficient number of additional intermediate line shaft bearings shall be provide at a maximum of 60" bearing centers with each being at a flanged column break.
 - b. One of the intermediate line-shaft bearings shall be at 18" below the stuffing box bearing to insure mechanical stiffness and relief on the stuffing box bearing.

- c. Column shall be flanged and factory, finish coated, inside and out, prior to assembly and shall connect with 316 series stainless steel machine screw bolts using 316 series stainless steel washers under nuts and heads to protect the finished coatings.
 - d. All flange bolts and head fasteners shall be properly tightened to proper torque specifications that shall be submitted and certified after construction and assembly, certificated by the manufacturer and field service technician.
9. Discharge Head Assembly: Provide discharge head assembly with a 316 SS mechanical seal housing with faces off stuffing boxes to accommodate a mechanical seal with the faces of housing to accommodate a mechanical seal, per below. All bolts and fasteners shall be 316 series, stainless steel. Steel shafting passing through mechanical seal housing shall be 416 series, stainless steel. The pump's line- shaft shall be suitable for reversing ends to renew wearing surface.
- a. Provide water-flushed mechanical seal type as specified below:
 - 1) Chesterton model S, AES, Model SCUSI, or John Crane Model 5610, cartridge type mechanical seal, with stainless steel vented seal gland.
 - 2) Seal face material to be Carbon vs. Silicon Carbide.
 - 3) Rotating metal parts shall be Type 316 stainless steel.
 - 4) O-rings for mechanical seals shall be ethylene propylene, EPDM.
Provide Type 316 stainless steel piping to convey flushing water discharge to a location on the top surface of the discharge head base plate, and shall be drilled and tapped to accommodate the connection of the vent / flush line.
10. Provide removable, adjustable, water slinger fitted to pump shaft to prevent pressurized leakage from stuffing box from entering motor enclosure.
11. Vortex Suppressor: Provide inlet to suction bell with a vortex suppressor that includes anti-vortexing veins. Vortex suppressor size and configuration shall be as recommended by the pump manufacturer.
12. Provide anchorages and inserts under this Section. Anchorages and inserts shall be sized and installed per pump manufacturer's recommendations.
13. Bolts, nuts, and cap screws shall have hexagon heads, be 316 SS machine screws and washers, and shall be provided by pump manufacturer for proper coordination of attaching the new pump discharge head to the existing pump suction barrel.
14. Attach to pump stainless steel nameplates giving manufacturer's name, model, and serial number, pump rated capacity, head, speed and other pertinent data.
15. Pump shall match and be compatible with the existing suction barrel. Pump manufacturer is solely responsible for assuring proper fit. Provide duplicate O-Ring gaskets and spares as outlined above to prevent leakage from mounting flange. Conform to ANSI/HI 9.8.
16. Existing suction barrels for each pump will be reused. Existing suction barrels for each pump shall be inspected and, if necessary, sandblasted and recoated. Refer to Section 09 91 00, Painting, for coating details.

17. Provide each pump with an adjustable, solid spacer coupling to provide for the adjustment of the lateral clearance of the pump assembly and the installation and maintenance of cartridge mechanical seals. Each coupling shall be manufactured completely from 410 series, stainless steel, or better, for long service life. Steel couplings shall not be acceptable.

B. Motors:

1. Motors shall Totally Enclosed, Fan Cooled, TEFC, type, premium efficiency, Vertical Solid Shaft, type, and shall be rated and labeled, for IEEE, NEMA MG-1, Part 31 and Part 33, INVERTER DUTY, suitable for 10 to 1 turn-down on variable torque loads.
2. Motors shall operate on 460-volt, Variable Hz, three-phase electric power.
3. Motors shall be full voltage starting, squirrel cage induction type, of sufficient size so that there will be no overload on motor above rated nameplate horsepower under all operating conditions from shut off head to zero head, unless otherwise specified in this Section.
4. Provide motors with service factor of 1.15.
5. Motor thrust bearings shall be high thrust capacity engineered for the application by the pump manufacturer. Bearings shall have a minimum B-10 life of 20,000 hours. Conform to applicable standards of ABMA.
6. Lubrication of motor bearings shall be as recommended by manufacturer.
7. Ratchets: Provide pumps with non-reverse mechanism in motor.
8. Contractor shall provide motors in compliance with Section 40 05 93, Common Motor Requirements for Process Equipment.

2.4 ANCHORAGE DEVICES

- A. Provide anchorages and fasteners of Type 316 stainless steel of ample size and strength for connection of the pumps to their suction barrels, sized by equipment manufacturer.

2.5 SHOP PAINTING

- A. Clean and prime coat ferrous metal surfaces of products in shop per Section 09 91 00, Painting.
- B. Coat machined, polished, and non-ferrous metal surfaces and similar unpainted surfaces with corrosion prevention compound that shall be maintained during storage and through start of equipment operation.

2.6 LUBRICANTS

- A. Provide lubricants, oil, and grease as required for initial operation. Products shall be as recommended by manufacturers of pump and motor.

2.7 SOURCE QUALITY CONTROL

- A. Pump Shop Tests: Shop test each pump as follows:
 - 1. Hydrostatically test pump bowl, column and discharge head to twice discharge head or 1.5 times pump shutoff head, whichever is greater, per ANSI/HI 2.6.
 - 2. Performance Test:
 - a. Pump bowls, vortex suppressor, job pump head, and job motor shall be performance tested in pump manufacturer's factory. Pump manufacturer shall provide pump column, line shaft, and other equipment and material required for performance test.
 - b. At least four weeks prior to scheduled pump performance test, pump manufacturer shall furnish ENGINEER with proposed test procedure. Proposed test procedure shall set forth:
 - 1) Pump speeds at which performance test will be run.
 - 2) Sample calculations illustrating how the head/capacity performance curves at full speed will be calculated from test readings.
 - 3) Conversion factors or tables that relate test instrument readings to quantities being measured.
 - 4) Description of proposed testing facility, including diagrams of equipment and proposed test set-up and list of instruments to be used in test. All instruments shall be calibrated per ANSI/HI standards. Provide certification of instrumentation calibration if requested by ENGINEER.
 - 5) Limitations of test stand and proposed deviations from ANSI/HI 2.6.
 - c. Assemble at pump manufacturer's factory the pump with number of bowls required, strainer, complete length of column and shaft, pump discharge head, and driver for performance tests. Performance test shall be in accordance with ANSI/HI 2.6 and ANSI/HI 9.6.5.
 - d. For shop performance tests, operate pump for at least thirty minutes at rated condition before recording data.
 - e. Operate pump assembly from zero to maximum capacity as shown on pump curve included in approved Shop Drawing. Provide results of performance test and include certified pump curves, brake horsepower, bowl efficiency and net positive suction head required. Readings shall be taken at a minimum of five evenly-spaced capacity points including shut-off, design points, and minimum head at which pump is designed to operate.

- f. Conduct performance tests within plus-or-minus five percent of design maximum speed and capacity. No minus tolerance is allowed with respect to capacity, total head, and specified efficiency at design point. For variable speed pumps, run performance test at full load speed, and derive a family of curves from test data. Family of curves shall be for speeds from 40 to 100 percent of full load speed.
 - g. Each test shall be witnessed by a registered, licensed professional engineer who may be an employee of pump manufacturer. Registered professional engineer shall sign and seal all copies of test curves and certify that hydrostatic tests were performed. Professional engineer's certification shall show the state of the professional engineer's registration and registration number. Professional engineer's name on seal shall be legible.
 - h. Provide to ENGINEER certified raw and reduced test data and curves covering each performance test within 14 days after completing performance test. Provide number of copies of test results specified for Shop Drawings. Include with submittal of performance test report the results of hydrostatic tests and copy of approved test procedure.
3. ENGINEER and OWNER reserve the right to witness any and all pumps being factory tested. Costs for attending the witness testing will be covered by the OWNER and ENGINEER.

B. Evaluation of Pump Shop Test Results and Non-conforming Products:

1. Obtain ENGINEER's approval of shop test results prior to shipping pumps from factory.
2. Evaluation of pump shop test results will consider the following: conformance with requirements and intent of the Contract Documents; conformance with specified head, flow, and efficiency at design point specified for each pump, conformance to ANSI/HI 2.6, and estimated annual operating and maintenance cost.
3. There shall be no minus tolerance with respect to capacity, total head, and bowl efficiency at design point condition. Pump performance shall be within tolerances specified in ANSI/HI 2.6.
4. An increase in horsepower at specified conditions when complying to the plus tolerances for head or capacity may be allowed by ENGINEER provided that motor remains non-overloading at all points of operation on head capacity curve from shut-off to minimum head without using motor service factor.
5. Performance test results will be basis for determining whether each pump, in combination with its test driver meets specified minimum efficiencies.
6. If test results indicate that pump does not comply with the Contract Documents, evaluation of operation and maintenance costs will be performed for operation at the specified design point. Efficiency damages, if any, will be based on operating and maintenance cost calculation.

7. Efficiencies Defined:
 - a. Each pump will be evaluated based on pump efficiency, compliance with flow and head criteria, power consumed, and vibration free operation in the lab. Consideration will be given for equipment not permanently installed in their project structures, but the factory must demonstrate reasonably smooth, vibration free operation.
8. If the specified performance is not met, modify the equipment and repeat the performance test at no additional cost to OWNER, until full compliance with specified performance is demonstrated. All costs incurred by OWNER for re-testing to ensure compliance with the Contract Documents, including OWNER's and ENGINEER's time and out-of-pocket costs required for re-testing, will be deducted from money due CONTRACTOR.
9. CONTRACTOR and pump manufacturer shall complete all modifications and re-testing within a period sixty days from date of transmittal of ENGINEER's review comments on first set of shop test results.
10. If specified performance requirements are still not met after modifications and two successive, unsuccessful tests by pump manufacturer, OWNER may, at its option, institute:
 - a. Allow additional time for CONTRACTOR and pump manufacturer to modify and re-test equipment.
 - b. If specified minimum efficiencies of pumps and associated motors determined by performance shop tests, are not met after completing modifications and re-testing procedures described above, an amount will be deducted from monies due CONTRACTOR in accordance with the following: The difference between total annual cost of electrical energy calculated using efficiency demonstrated by performance tests and efficiency guaranteed by the pump manufacturer. Calculations will be based on formulas and information provided below.
11. No additional payment, credit, or allowance will be made for efficiencies greater than minimum values specified in the Contract Documents.

C. Job Motor Shop Tests:

1. See Section 40 05 93, Common Motor Requirements for Process Equipment, for shop test requirements.
2. If motor shop tests results indicate that a motor does not conform to specified performance, motor shall be modified and re-tested at no additional cost to OWNER, until full compliance with specified and guaranteed performance is demonstrated. Allow OWNER and ENGINEER to witness retest.
3. Do not ship motor from motor manufacturer's plant until all test data has been approved by ENGINEER.

PART 3 - EXECUTION

3.1 INSPECTION

- A. The Manufacturer shall examine conditions under which products are to be installed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install products in conformance with governing codes, applicable standards, manufacturer's instructions and recommendations, and the Contract Documents.
- B. Anchorages and Baseplates or Soleplates:
 - 1. Install pumps on existing steel suction barrels. Provide anchorages in new or existing concrete, as applicable, per equipment manufacturer's recommendations and the Contract Documents. Equipment manufacturer shall supply templates to facilitate location of anchorages for equipment. CONTRACTOR shall coordinate with Supplier and equipment manufacturer to assure timely receipt of required templates.
 - 2. Base with equipment mounted thereon or soleplate shall then be accurately shimmed to grade and spaces between filled with non-shrink grout . After grout has reached its initial set, exposed edges shall be neatly cut back 1/2-inch and the edges neatly finished.
- C. General:
 - 1. Conform to ANSI/HI 2.4.
 - 2. Perform all drilling and fitting required for installation. Set the products accurately in location, alignment, and elevation, plumb and true.
 - 3. Fit exposed connections accurately together to form tight hairline joints.
 - 4. Provide utility connections per the Contract Documents. Verify that utilities and valves are tested and operational before placing equipment into operation. Connection of discharge nozzle to piping shall conform to ANSI/HI 9.6.2.
 - 5. Align and adjust equipment including shafting, motors, drives, and piping in presence of ENGINEER
 - 6. Install for initial operation lubricants recommended by equipment manufacturer.
 - 7. Prior to energizing motor driven equipment, rotate drive motor by an external source to demonstrate free operation of mechanical parts. Do not energize equipment until safety devices are installed, connected, and functional.
- D. Field painting shall conform to Section 09 91 00, Painting.
- E. Conform to Section 01 75 11, Checkout and Startup Procedures.

3.3 FIELD QUALITY CONTROL

A. Site Tests:

1. Following installation, CONTRACTOR and a qualified field service representative of equipment manufacturer shall conduct operating tests of all equipment, functions, and controls at the Site in presence of ENGINEER. Should tests result in malfunction, make necessary repairs, revisions, and adjustments and restart test from the beginning. Repeat tests and repairs, revisions, and adjustments until, in opinion of ENGINEER, installation is complete and equipment is functioning properly and accurately, and is ready for permanent operation.
2. Field Vibration Tests:
 - a. Provide services of an independent expert in the field of vibration analysis and control with qualifications acceptable to ENGINEER for conducting vibration tests following installation of pumps and prior to start-up.
 - b. Vibration testing and criteria for acceptance shall be per ANSI/HI 9.6.4.
 - c. Perform a bump test on pump in each of two orthogonal planes, one of which shall include pump's discharge nozzle, to ensure that pumps will not develop lateral or torsional critical speeds. Perform tests after pump is installed, under both operating and non-operating conditions. Other suitable tests may be substituted subject to ENGINEER's approval of CONTRACTOR's written request and description of tests proposed.
 - d. Obtain vibration measurements at pump's upper motor bearing while operating over its speed range. Obtain measurements in each of two orthogonal horizontal directions, one of which shall be in plane of greatest vibration and in vertical (pump axial) direction.
 - e. Submit to ENGINEER report of successful vibration tests for each pump.
3. Field Operating Test:
 - a. Field test equipment and its controls in local mode, followed by demonstrating proper operation and controls in automatic mode. Demonstrate that each part and component of system individually and all parts and components together function properly in manner intended. Total duration of testing shall be 72 hours for each pump, continuous and uninterrupted, in automatic mode. All testing equipment and manpower shall be by CONTRACTOR.
 - b. Comply with applicable provisions of ANSI/HI 9.6.4.

B. Manufacturer's Services: Provide a qualified, factory trained serviceman to perform the following:

1. Supervise unloading and installation of equipment.
2. Instruct CONTRACTOR in installing equipment.
3. Inspect and adjust equipment after installation and ensure proper operation.

4. Test-operate the products in presence of ENGINEER and verify that equipment conforms to Contract Documents.
5. Instruct OWNER's personnel in operating and maintaining the products.
6. Manufacturer's representative shall make a minimum of six visits (two per pump), with a minimum of six hours onsite for each visit. First visit shall be for unloading supervision and instruction of CONTRACTOR in installing equipment; second visit shall be for assistance in installing equipment; third-fifth (one for each pump) visits shall be for checking completed installation and start-up of system; sixth visit shall be to instruct operations and maintenance personnel. Representative shall revisit the Site as often as necessary until installation is acceptable.
7. Training: Furnish services of qualified factory trained specialists from manufacturer to instruct OWNER's operations and maintenance personnel in recommended operation and maintenance of the products for a minimum of two four-hour sessions. Training requirements, duration of instruction, and other qualifications shall be per Section 01 79 23, Instruction of Operations and Maintenance Personnel.
8. All costs, including expenses for travel, lodging, meals and incidentals, and cost of travel time, for visits to Site shall be included in the Contract Price.

+ + END OF SECTION + +

CITY OF VENICE PROCUREMENT- FINANCE DEPARTMENT

401 W. VENICE AVE. - ROOM # 204
VENICE, FL. 34285 (941) 486-2626
FAX (941) 486-2790

ADDENDUM NO. 1

Date: March 15, 2016

To: All Prospective Proposers

Re: ITB# 3025-16 RO WTP High Service Pump Replacement

This addendum sets forth changes and/or information as referenced and is hereby made part of and should be attached to the subject Contract Documents. Receipt of this Addendum shall be acknowledged below and in the submitted proposal. It shall be the responsibility of each proposer, prior to submitting a proposal, to contact the City of Venice- Procurement- Finance Department to determine if addenda were issued and to make such addenda a part of their proposal.

The following is to clarify and provide additional information requested during the pre-bid meeting held March 3, 2016 at 2:00 P.M.

Summary:

Peter Boers, Procurement Manager, opened the meeting

1. **Important dates:** Bids are due March 24, 2016 at 2:00 p.m. at City Hall room #204. Bids are to be delivered to Suite 204 in City Hall. The bid opening will take place in the Community Hall (room #114).
2. The Cut-Off for questions will be March 11, 2016 at 1:00 PM
3. Mr. Boers advised the bidders to read through *Instructions to Bidders*, but made note of the following Articles.
 - Article 10 Bid Security - 5% Bid Security is required.
 - Article 11 Contract Times – time to completion is 285 days from NTP.
 - Article 12 Liquidated Damages - Mr. Boers advised that the stipulated damages for this project are \$1532 per day.

- Article 23 Contract Securities - The awarded contractor will be required to provide a Performance and Payment Bond equaling 100% of the contact amount. **EXHIBIT A**
 - Article 24 Contractors Insurance -Mr. Boers reviewed **EXHIBIT B: Insurance Requirements**.
 - General Liability -\$1,000,000 per occurrence
 - Business Auto Liability - \$1,000,000 combined single limit
 - Worker’s Comp per State Statute
 - Builders’ Risk Installation Coverage to be provided prior to Notice to Proceed
 - Article 29 Local Preference – Local preference is applicable to this bid.
4. Mr. Boers reviewed the required forms that must be returned with each firm’s submittal. These required forms are listed in the Appendix of the bid document. Mr. Boers advised, even if a form does not pertain to said company - to still mark it with a “N/A” and return it with each submittal. Mr. Boers also advised that the *Required Forms List* could be used as a “check off” sheet for firms to use.
 5. Bidders are asked to complete and return the *Bidder’s Qualification Statement* with their bid.
 6. Mr. Sean Chaparro, the City’s consulting Engineers from Arcadis, reviewed the scope of work and provided a brief overview of the project.
 7. Mr. Boers opened the floor for bidder’s questions. He advised the attendee’s to follow up in writing if they do not see an answer to their question published in an addendum and to not assume a change is in effect unless published in an addendum.
- No vendor questions were received at the pre-bid.

The following Requests for Information were submitted prior to the deadline for questions:

1. For surety reporting, please confirm the Engineering and/or City budget estimate for work to be performed

Response: \$635,000
2. Regarding the site visit, please confirm if this site visit is mandatory for prospective bidders.

Response: Non-mandatory
3. Please confirm the OEM of the existing pumps to be replaced.

Response: The original equipment manufacturer of the existing pumps is Peerless Pump

4. Regarding I/C scope, please confirm if the City is under a blanket contract with any I/C firm to perform any changes required in programming scope and/or has pre-qualified I/C subcontractors to work on this facility.

Response: The City is under no blanket contract at the moment. The Contractor will be required to perform screen updates on site

5. Please confirm estimated award and notice to proceed dates for this bid.

Response: 2-3 months after bid opening.

6. In Section 40 05 93, Common Motor Requirements for Process Equipment, Subsection 1.4 appears to outline the requirements for documentation requirements for shop drawings, down to "D. Maintenance Material Submittals: Submit the Following: "where 1. "Spare parts and Extra Stock Materials". a., b., c., d., and e. appear to discuss actual spare materials requirements for motor fans, fan guards, bearing liners, bearings, oil rings, bearing temperature detectors, and motor touch up paint. Are these actual Motor, spare parts, materials requirements that all apply because there are three motors on this job?

Response: Spare parts and extra stock materials are required as specified.

7. In Section 40 05 93, Common Motor Requirements for Process Equipment, Subsection 2.6 - Is the requirement for these High Service Pump Motors to be Complete motor tested because the pump tests are to be performed with the Job Motors as a complete unit, (requiring the job motors to be "calibrated")?

Response: Yes.

8. Will the VFDs be demolished? E-03 Shows demolition of existing 150HP VFD. However, in Section 43 21 13.33, 1.1 A. 4- "use on existing VFDs" is shown?

Response: The existing VFDs are to remain. E-03 shows the demolition of existing wiring upstream and downstream of existing VFDs, as well as the demolition of existing flexible conduits, enclosed circuit breakers, motors, etc.

9. Section 43 21 13.33, Subsection 2.3 A. 9. "316 SS mechanical seal housing" appears to be defining the stuffing box but that's specified in section A. 2.d. as cast iron. "cast iron, removable seal container/stuffing box". Which is it?

Response: Per Section 43 21 13.33, Subsection A 2 d, the new fabricated steel discharge heads shall be provided with a cast iron, removable seal container / stuffing box that will accommodate a 4-bolt attachment of the required cartridge mechanical seal.

10. Section 43 21 13.33, Subsection 11. Vortex suppressor? What materials of construction? 316 Stainless Steel?

Response: The vortex suppressor material shall be 316 Stainless Steel.

11. Rebuild surge relief valve specs? Materials of pilots, piping, isolation valves, elastomers – EPDM?

Response: The surge relief valve rebuild requirements are specified on sheet M-02. The internal rubber parts shall be Buna-N® synthetic rubber and the pilot system shall be stainless steel.

12. Please give clarification on Bid sheet item #4-Face off an existing can machine flat?

Response: The pump and driver must be realigned in the field prior to final grouting of the baseplate. The baseplate must be adjusted (as necessary according to the pump manufacturer’s specified requirements) to provide a level surface for the pump to rest so as to avoid “soft foot”.

13. What is the procedure to complete the face off and can machine flat?

Response: Faceoff procedure shall be as recommended by the pump manufacturer.

14. What are the coating specifications for the pump cans?

Response: See specification 09 91 00, Painting, Article 2.2, which covers new and existing submerged surfaces.

15. Where in the document can we find the pump specifications of the existing pumps?

Response: Attached please find select sheets of the O&M manual for the existing pumps. Additional pump information is noted below:

Parameter	Specification
GPM	2200
TDH	200
HP	150
RPM	1775

16. Will AES CURC seals be acceptable as an alternate mechanical seal to the specified John Crane 5610

Response: Mechanical seals shall be Chesterton model S, AES, Model SCUSI, or John Crane Model 5610 as specified in 43 21 13.33 2.3.A.9

The following changes, additions, and/or deletions are hereby made a part of the Request for Bid for the City of Venice's, High Service Pump Replacement, Bid No.: ITB-3025-16, as fully and completely as if the same were fully set forth therein:

This addendum consists of FIVE (5) 8-1/2 by 11-inch sheets and three (3) attachments as follows:

- Attachment 1 – Select sheets of O&M manual of existing pumps
- Attachment 2 – REV 1 Drawing
 - Sheet M-02 – HIGH SERVICE PUMP STATION SECTIONS
- Attachment 3 - REV 1 Specifications
 - Section 01 14 16 – Coordination with Owners Operations

Peter A. Boers
Procurement Department

Acknowledgment is requested even if you have elected not to respond to this bid. A designated management representative of your firm can sign the receipt for this addendum. Please acknowledge receipt of this addendum immediately by fax to (941) 486- 2790 or mail to the above noted address, if a fax is not possible.

Receipt Acknowledged:

Signature

Company

Date

Peerless Pump

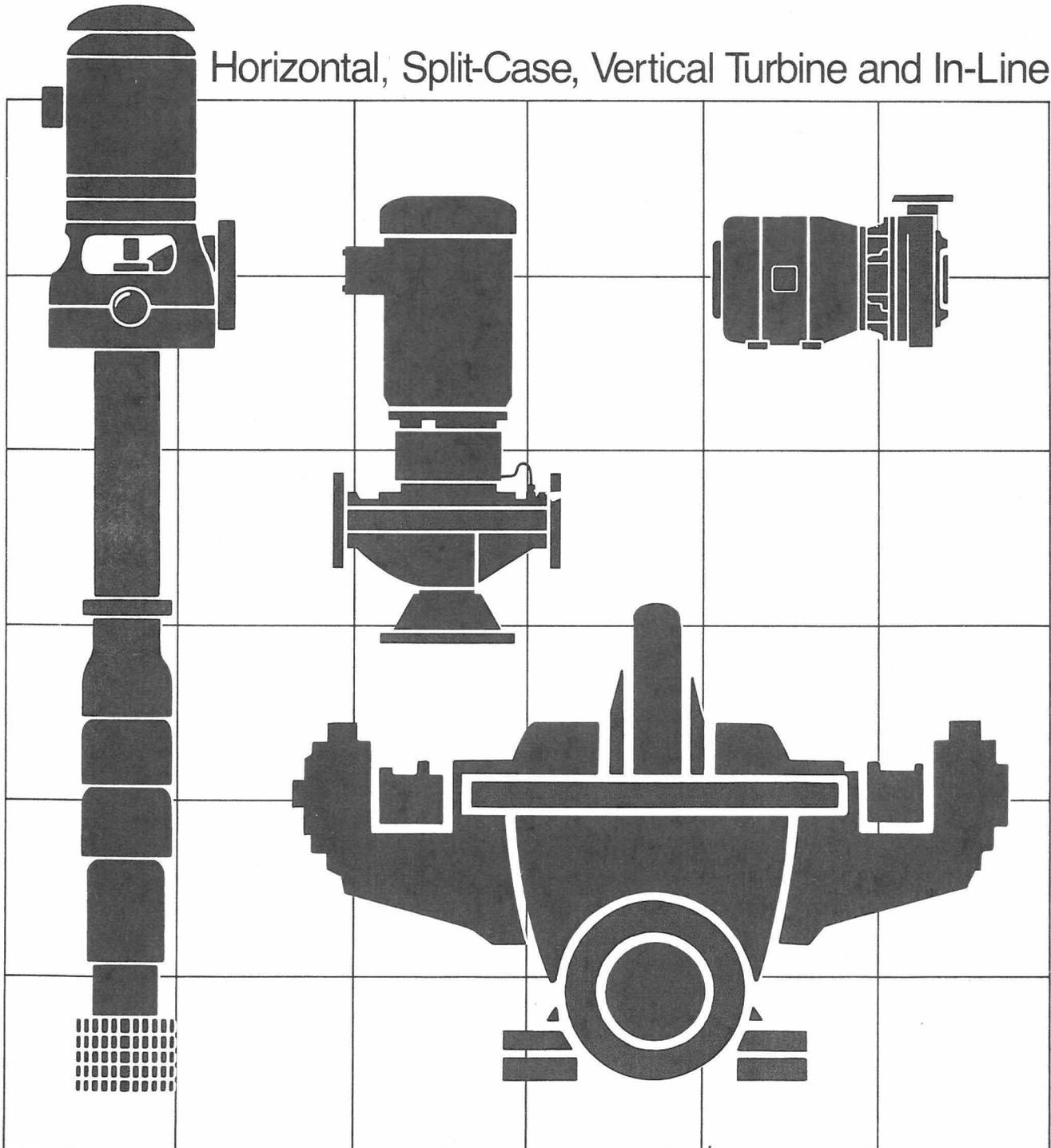
INSTRUCTION MANUAL

CITY OF VENICE FLORIDA
REVERSE OSMOSIS WATER TREATMENT PLANT IMPROVEMENTS
PHASE II 2.0 MGD RO PLANT

SECTION 11214 VERTICAL TURBINE "CAN" HIGH SERVICE PUMPS

MODEL 16MC/14HH SER. NO. 257297-298-299

Horizontal, Split-Case, Vertical Turbine and In-Line



MOTOR DATA

City of Venice RO Water Plant HIGH SERVICE PUMPS PHYSICAL CHARACTERISTICS

Manufacturer	U.S. ELECTRIC	S.O. No.	S2130014
Type	VERTICAL SOLID SHAFT		TV4
Enclosure	TOTALLY ENCLOSED FAN COOLED		
Horsepower	150		
RPM Nominal	1800		
Frame	447VPA	Weight	2100
Motor Height	AG 51 5/8"		
Base Diameter	BD 20"		
Shaft Extension	AH 4 1/2"		
Shaft Diameter	U 2 1/8"		
External Down Thrust Capacity	8000lbs		

ELECTRICAL CHARACTERISTICS

Voltage	460	TORQUE LBS/FEET	
Phase	3	Full Load	442
Hertz	Variable	Starting % of Full Load	110%
Ambient Design	40 dC	Break Down % of Full Load	200%
Insulation Class	F	AMPERES	
Temperature Rise	80dC	Full Load	175.0
Service Factor	1.15	Locked Rotor	1160.0
Full Load RPM	1775	Nema Starting Code	G
		EFF	PF
Nominal Full Load	93.4		85.6
Guarantee Full Load	93.4		85.6
3/4 Load	93.0		84.6
1/2 Load	91.4		80.3
			PFc
			KVAR
			Max

SPECIAL FEATURES

Separate Conduit Box			
Space Heaters	120 Volt	192 Watts	
Drains & Breathers			
Winding Thermostats			
Vibration Detector			
Short Commercial Test			
Spare Parts			
Variable Frequency Drive			
Mass Elastic			
Reed Critical Frequency		33.3 Hertz	
Center of Gravity		21.8	
Deflection		.009"	

PUMP DATA

City of Venice RO Water Plant HIGH SERVICE PUMPS PERFORMANCE

S.O. No.	75126EV	GPM	0	1000	Design	3300
Ser. No.	257297	TDH	310	265	2200	100
	257298	EFF	0	0.583	215	0.643
	257299	BHP	98	114.8	0.83	129.6
		Thrust	7716	6636	143.9	3195
		NPSHr		10	5221	28
Model	16MC/14HH	WR^	Lb/Inch		1932	
Stages	3	Available Lateral			0.813	
Impeller No. 16MC	2626756	2	Best Lateral		0.0625	
Impeller No. 14HH	2621973	1				
Type	OLS					

CONSTRUCTION

Item	Qt	Size	Length	Material
Discharge Assembly	1	12C		Cast Iron
Seal Container Assembly	1	1 11/16"		Cast Iron
Packing	6	1/2 x 1 11/16		Syn
Flanged Coupling	1	2 1/8 x 1 11/16"		Steel
Column Pipe	2	12"	59 1/2"	Coated Steel
Shaft Top	1	1 11/16"		416 SS
Shaft Bottom	1	1 11/16"	59 1/2"	416 SS
Shaft Coupling	1	1 11/16"		416 SS
Brearing Retainer	1	1 11/16"		Bronze
Shaft Bearing	1	1 11/16"		Neoprene
Top Bowl	1	16MC		Cast Iron
Interm. Bowl	1	16MC		Cast Iron
Bottom Bowl	1	14HH		Cast Iron
Impeller	2	16MC		Bronze
Impeller	1	14HH		Bronze
Impeller Locks	3			316 SS
Lateral Seal Ring	3			Neoprene
Impeller Shaft	1	1 15/16 "	69 1/8"	416SS
Bearing Sleeve	7	1 15/16 "		Bronze
Bell Suction Manifold	1	14HH		Cast Iron
Vortex Suppressor	1			316SS
Suction Barrel	1	24"	15.75'	Coated Steel
Coating System Koppers Inertol				
Non Witnessed Laboratory Performance Test				
Torsional Analysis				

Total Weight 2435 Pounds

HYDRA PERFORMANCE WARRANTY

GUARANTEED AT DESIGNATED POINT ONLY AND IS CONTINGENT ON

1. PROPER AND ADEQUATE FLOW TO PUMP SUCTION
2. ADEQUATE NPSH
3. FLUID FREE OF GAS, AIR AND ABRASIVE MATTER.



Peerless Pump

An Indian Head Company

2005 Northwestern Avenue Indianapolis, IN 46206
1200 Sycamore Street Montebello, CA 90640

CURVE NO _____

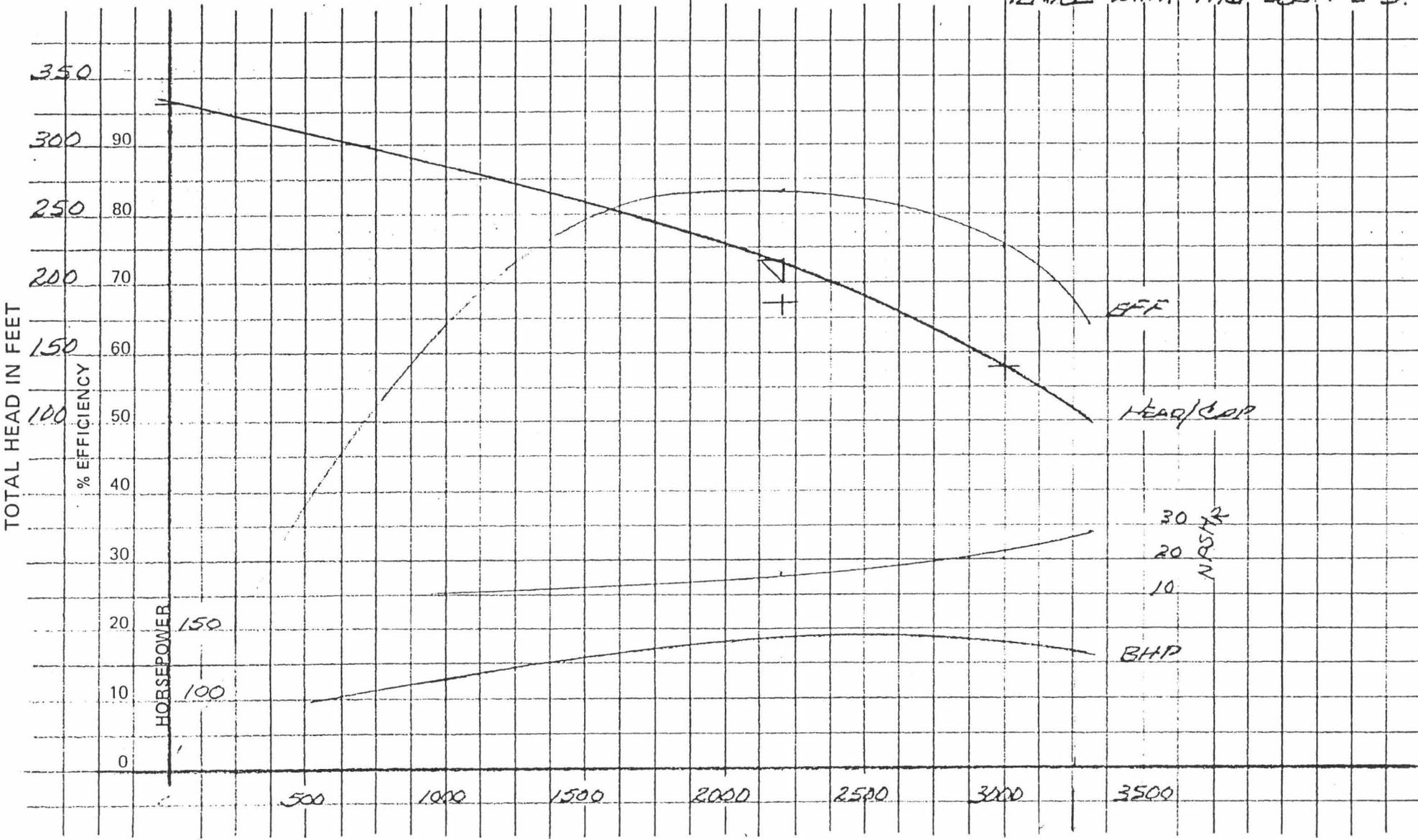
PUMP SIZE 16MC/144H RPM 1775

IMPELLER 2626756F DIA _____

PUMP NO 2621973

S/O NO _____

VENICE W.T.P. HIGH SEPT. 1-2-3.



PLOTTED BY V.E. FROM TEST NO. _____ DATE 6-28-89

PEERLESS PUMP COMPANY

**VERTICAL TURBINE CANNED PUMP
VARIABLE SPEED DRIVE**

Venice RO Water Plant
High Service Pumps 123

MODEL: 14HH/16MC 3 STAGE
 DISCHARGE: 12" 125 LB FLG. FF
 COLUMN: 12" "
 SHAFT: 1-11/16"
 TYPE: OLS WATER LUBRICATED
 GPM: 2200
 TDH: 215 FEET
 RPM: 1775
 HP: 150
 TYPE: VSS
 ENCLOSURE T.E.F.C.
 VOLTAGE 460/3/60

Level Pump Mounting Plate
to within .005"/ft

"O" Ring Seal between pump & barrel

Barrel Inlet 20" 125 lb FF

Barrel Wall 3/8"

Anchor Bolts Required 4 - 1" 18-8 SS

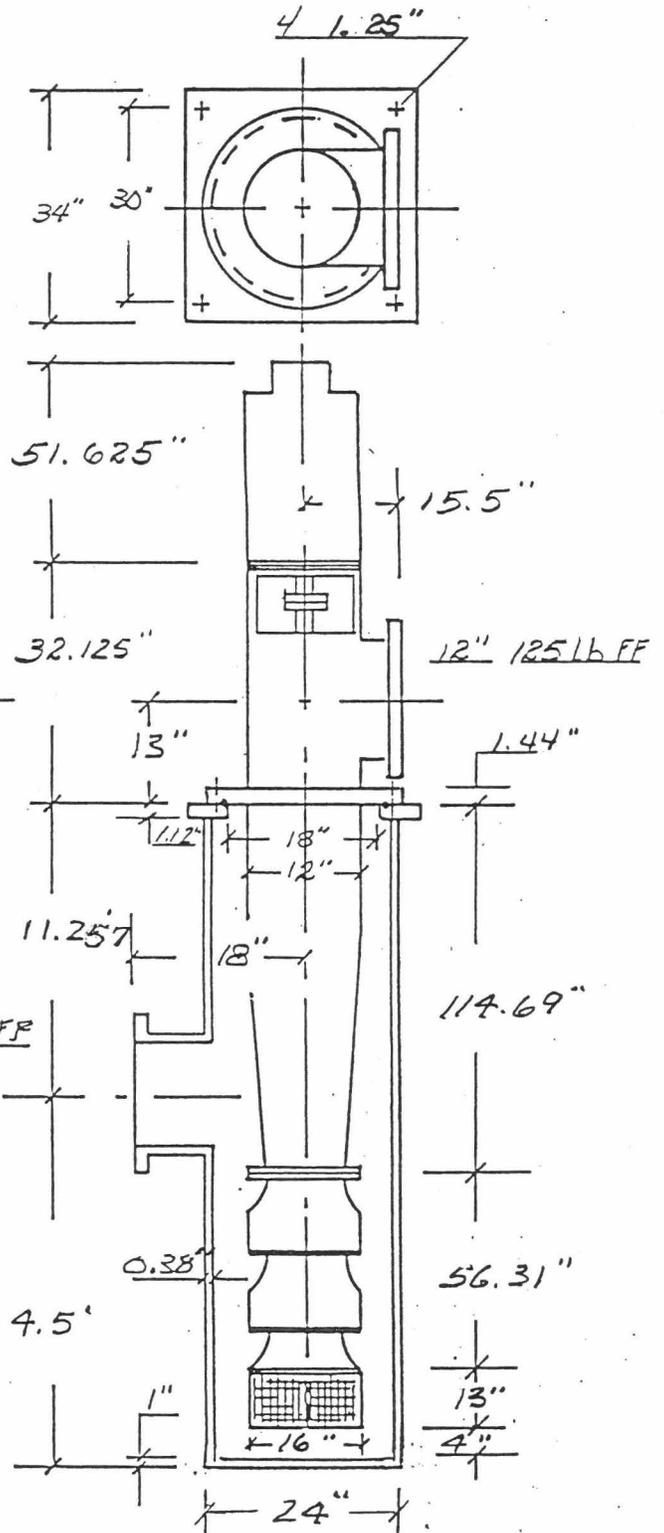
COATING SUBMERGED SURFACES:

Koppers Inertol 49

COATING EXPOSED SURFACES:

Prime Coat Only; finish by field

MOTOR WEIGHT = 2100 POUNDS
 PUMP WEIGHT = 2510 POUNDS



This drawing is typical for the purpose of providing installation dimensions and may not exactly represent the actual appearance of the equipment to be furnished. Detail construction drawings of components are provided elsewhere.



NO.	DATE	ISSUED FOR	BY
A	5/9/2016	ADDENDUM NO. 1	MB

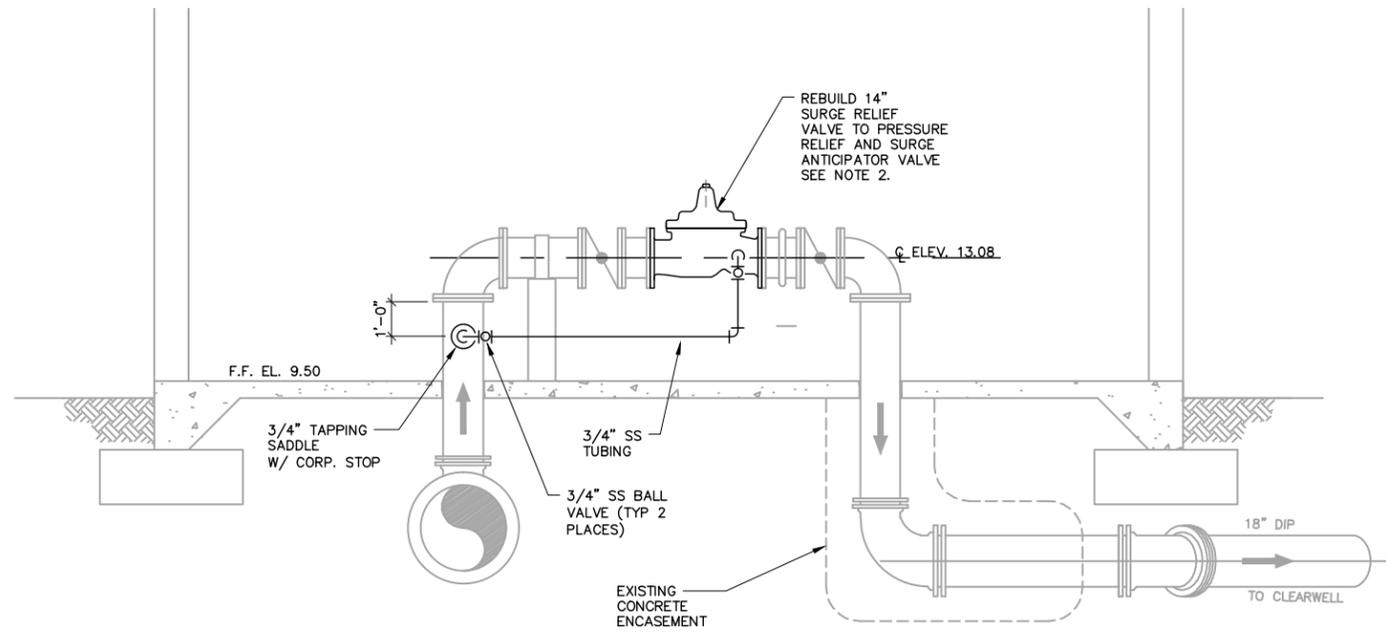
COPYRIGHT: ARCADIS U.S., INC.
2016

DATE: MARCH 2016
PROJECT NO.: 05710026.0000
FILE NAME: M-02
DESIGNED BY: M. BUTCHER
DRAWN BY: M. CORNELISON
CHECKED BY: S. CHAPARRO

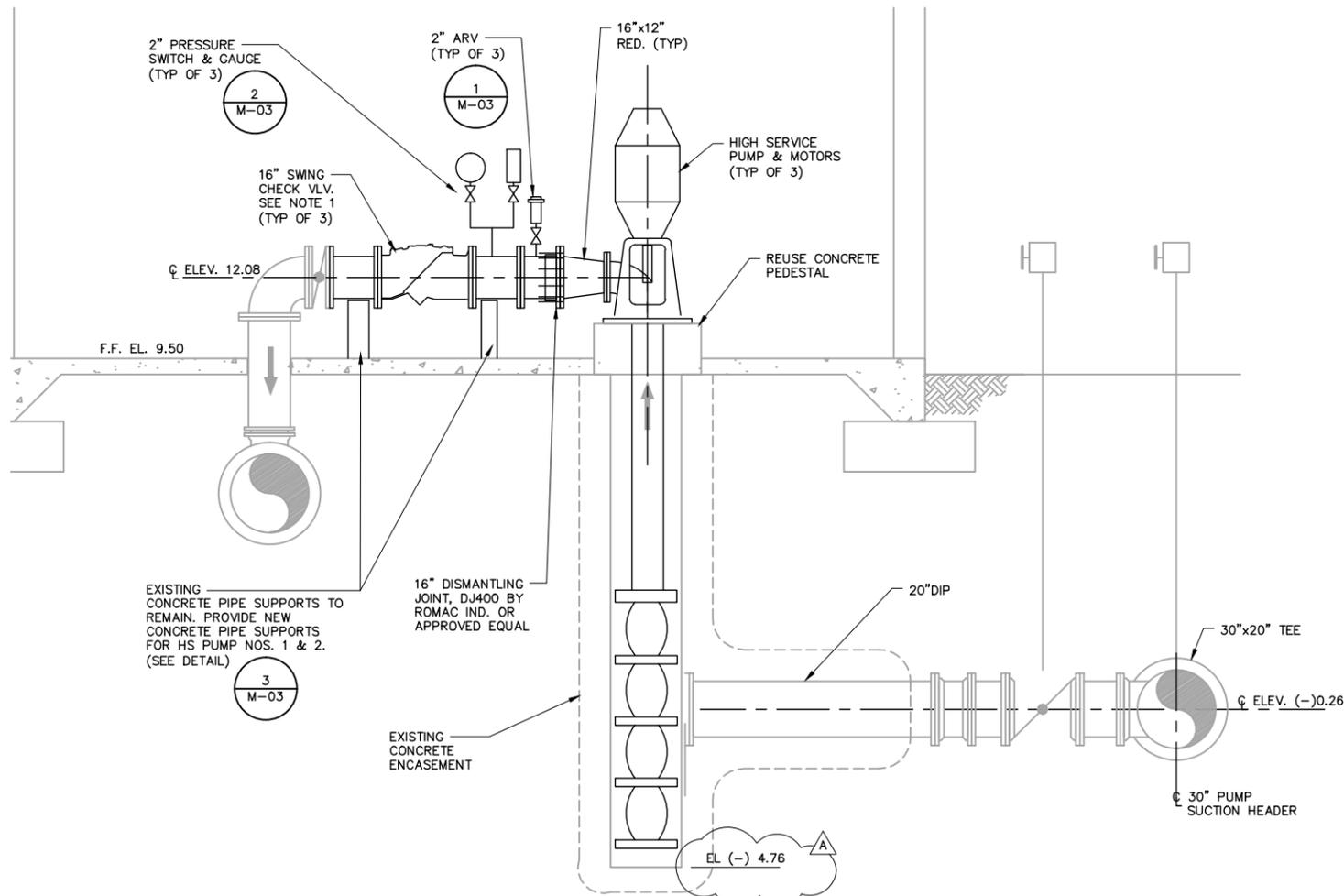
SHEET TITLE
MECHANICAL
**HIGH SERVICE PUMP
STATION SECTIONS**

SCALE: 3/8" = 1'-0"

M-02
SHEET 6 OF 12



SECTION - SURGE ANTICIPATOR VALVE



SECTION - HIGH SERVICE PUMP HEADER

NOTES:

- HORIZONTAL SWING CHECK VALVE SHALL BE VALMATIC, GLOBE STYLE, SURGEBUSTER CHECK VALVE SERIES 7200 (16-INCH) OR APPROVED EQUAL WITH MECHANICAL INDICATOR AND BACKFLOW ACTUATOR, FLANGED CONNECTIONS AND LIMIT SWITCH FOR LOW FLOW. LIMIT SWITCH SHALL BE RATED NEMA 4 AND SHALL HAVE U.L. RATED 5 AMP 250VAC CONTACTS, SPDT. PROVIDE MICRO SWITCH, MODEL NO. 914CE20-3 OR EQUAL. VALVE MATERIALS SHALL BE SUITABLE FOR LONG-TERM USE IN THE SERVICE SPECIFIED; INSIDE AND OUTSIDE OF ALL VALVES, TOGETHER WITH THE WORKING PARTS EXCEPT BRONZE AND MACHINED SURFACES, SHALL BE COATED IN ACCORDANCE WITH AWWA STANDARDS.
- CONTRACTOR SHALL REBUILD THE EXISTING 14-INCH SURGE RELIEF VALVE. THIS SHALL INCLUDE PROVIDING NEW INTERNAL RUBBER PARTS, INSPECTION OF THE INTERNAL SEAT AND BODY, AND RECOATING OF SURFACES, AS NECESSARY (ALL PARTS AND COATINGS SHALL CONFORM TO THE LATEST AWWA DRINKING WATER STANDARDS). CONTRACTOR SHALL REMOVE THE EXTERNAL PILOT CONTROL SYSTEM AND REPLACE WITH CLA-VAL E-52-03 PILOT SYSTEM TO CONVERT THE EXISTING VALVE TO A 'PRESSURE RELIEF AND SURGE ANTICIPATOR' VALVE. THIS WILL INCLUDE ALL PRE-BENT TUBING, FITTINGS, PILOT CONTROLS, STRAINER AND FLOW LIMITER. VALVE MATERIALS SHALL BE SUITABLE FOR LONG-TERM USE IN THE SERVICE SPECIFIED; INSIDE AND OUTSIDE OF ALL VALVES, TOGETHER WITH THE WORKING PARTS, SHALL BE COATED IN ACCORDANCE WITH AWWA STANDARDS. PILOT SYSTEM AND VALVE OPERATION SHALL BE SUCCESSFULLY TESTED BY THE MANUFACTURER PRIOR TO ACCEPTANCE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THE VALVE PILOT SYSTEM AND APPURTENANCES DO NOT SUSTAIN DAMAGE ON SITE PRIOR TO AND DURING INSTALLATION.



User: MCCORNELISON, Spec: AUS-NCSMOD, File: \\CADD\ACAD\PROJ\5710 - CITY OF VENICE\026 SHEETS\MECHANICAL\M-02.DWG, Scale: 1:1, SavedDate: 3/9/2016, Time: 10:06, Plt: Date: Cornelison, Mkt: 3/9/2016, 10:07, Layout: 6

SECTION 01 14 16

COORDINATION WITH OWNER'S OPERATIONS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
1. This Section includes requirements for coordinating with OWNER's operations during the Work, and includes requirements for tie-ins and shutdowns necessary to complete the Work without impact on OWNER's operations except as allowed in this Section.
 2. CONTRACTOR shall provide labor, materials, tools, equipment and incidentals shown, specified and required to coordinate with OWNER's operations during the Work.
- B. Coordination:
1. Review installation procedures under other Specification sections and coordinate Work that must be performed with or before the Work specified in this Section.
- C. Related Sections:
1. Section 01 11 13, Summary of Work.
 2. Section 40 60 05, Instrumentation and Control for Process Systems.
 3. Section 43 21 13.33, Centrifugal Vertical Lineshaft Pumps.
- D. Except for shutdowns specified in this Section, perform the Work such that OWNER's facility remains in continuous satisfactory operation during the Project. Schedule and conduct the Work such that the Work does not: impede OWNER's production or processes, create potential hazards to operating equipment and personnel, reduce the quality of the facility's products or effluent, or cause odors or other nuisances.
- E. Work not specifically covered in this Section or in referenced Sections may, in general, be completed at any time during regular working hours in accordance with the General Conditions and Supplementary Conditions, subject to the requirements in this Section.
- F. CONTRACTOR has the option of providing additional temporary facilities that can eliminate or mitigate a constraint without additional cost to OWNER, provided such additional temporary facilities: do not present hazards to the public, personnel, structures, and equipment; that such additional temporary facilities do not adversely affect OWNER's ability to comply with Laws and Regulations, permits, and operating requirements; that such temporary facilities do not

generate or foster the generation of odors and other nuisances; and that requirements of the Contract Documents are fulfilled.

- G. Coordinate shutdowns with OWNER and ENGINEER. When possible, combine multiple tie-ins into a single shutdown to minimize impacts on OWNER's operations and processes.
- H. Do not shut off or disconnect existing operating systems, unless accepted by ENGINEER in writing. Operation of existing equipment will be by OWNER unless otherwise specified or indicated. Where necessary for the Work, CONTRACTOR shall seal or bulkhead OWNER-operated gates and valves to prevent leakage that may affect the Work, OWNER's operations, or both. Provide temporary watertight plugs and bulkheads as required. After completing the Work, remove seals, plugs, and bulkhead to satisfaction of ENGINEER.
- I. Bypassing:
 - 1. Diversion of flows around treatment processes is not allowed.

1.2 SUBMITTALS

- A. Action Submittals: Submit the following:
 - 1. Substitute Sequence Submittal: When deviation from specified sequence is proposed, provide submittal explaining in detail the proposed sequence change and its effects, including evidence that OWNER's operations will not be adversely affected by proposed change. List benefits of proposed sequence change, including benefits to Progress Schedule. Submit in accordance with Section 01 25 00, Substitution Procedures.
- B. Informational Submittals: Submit the following:
 - 1. Shutdown Planning Submittal:
 - a. For each shutdown, submit an inventory of labor and materials required to perform the shutdown and tie-in tasks, an estimate of time required to accomplish the complete shutdown including time for OWNER to take down and start up existing equipment, systems, or conduits, and written description of steps required to complete the Work associated with the shutdown.
 - b. Furnish submittal to ENGINEER at least thirty days prior to proposed shutdown start date. Do not start shutdown until obtaining ENGINEER's acceptance of shutdown planning submittal.
 - 2. Shutdown Notification: After acceptance of shutdown planning submittal and prior to starting the shutdown, provide written notification to OWNER and ENGINEER of date and time each shutdown is to start. Provide notification at least 72 hours in advance of each shutdown.

1.3 GENERAL CONSTRAINTS

- A. Specified in the Contract Documents are the sequence and shutdown durations, where applicable, for OWNER'S equipment, systems, and conduits that are to be taken out of service temporarily for the Work. New equipment, materials, and systems may be used by OWNER after the specified field quality controls and testing are successfully completed and the materials or equipment are Substantially Complete.
- B. The following constraints apply to coordination with OWNER's operations:
1. CONTRACTOR shall maintain two high service pumps in service at all times during construction unless otherwise specifically permitted in these specifications or approved by OWNER.
 2. Operational Access: OWNER'S personnel shall have access to equipment and areas that remain in operation.
 3. Schedule and perform equipment and system start-ups for Monday through Thursday. Equipment and systems shall not be placed into operation on Friday, Saturday, and Sunday without prior approval of OWNER.
 4. Dead End Valves or Pipe: Provide blind flanges, watertight bulkheads, or valve at temporary and permanent terminuses of pipes and conduits. Blind flanges and bulkheads shall be suitable for the service and braced and blocked, as required, or otherwise restrained as directed by ENGINEER. Temporary valves shall be suitable for their associated service. Where valve is provided at permanent terminus of pipe or conduit, also provide on downstream side of valve a blind flange with drain/flushing connection.
 5. OWNER will assist CONTRACTOR in operating valves. CONTRACTOR shall be responsible for dewatering existing pipes, pump cans and other work areas. Maintain clean and dry work area by pumping and properly disposing of fluid that accumulates in work areas.
 6. Cleaning, Draining, and Inspection of Pump cans:
 - a. CONTRACTOR shall dewater existing pump cans and perform a video inspection to confirm the condition of each can.
 - b. CONTRACTOR shall remove liquids and solids and dispose of them at appropriate location at the Site as directed by ENGINEER. Discharge of fluids across floors is not allowed.
 - c. If drainage point is not available on the piping or conduit to be drained, provide a wet tap using tapping saddle and valve or other method approved by ENGINEER. Uncontrolled spillage of contents of pipes or conduits is not allowed.
 - d. Spillage shall be brought to ENGINEER's attention immediately, both verbally and in writing, and reported in accordance with Laws and Regulations. CONTRACTOR shall wash down spillage to drains and flush the system to prevent clogging and odors. If spillage is not suitable for discharge to the drainage system, such as chemical spills, as determined by ENGINEER, CONTRACTOR shall remove spillage by other method, such as vactor truck, acceptable to ENGINEER.

1.4 SEQUENCE OF WORK

- A. Perform the Work in the specified sequence. Certain phases or stages of the Work may require working 24-hour days or work during hours outside of regular working hours. Work may be accelerated from a later stage to an earlier stage if OWNER's operations are not adversely affected by proposed sequence change, with ENGINEER's acceptance. Stages specified in this Article 1.4 are sequence-dependent.
1. Stage I: Stage equipment for project activities.
 2. Stage II: Rewire and install the new junction box for the pump pressure switches.
 3. Stage III: Rebuild and convert existing 14" surge relief valve to a pressure relief and surge anticipator valve.
 4. Stage IV: Dewater and video inspect the pump cans at pedestal nos. 4 and 5, where no pumps currently exist. If necessary, sandblast and recoat cans if found in poor condition. Install new pumps, motors, valves and appurtenances at pedestals nos. 4 and 5. Transfer required electrical components, wiring and conduit for new HS pump no. 1. Test HS pump no. 1 as specified. HS pump no. 1 must be tested and accepted before required electrical work is performed on HS pump no. 2. HS pump no. 2 shall be tested and accepted before installing HS pump no. 3.
 5. Stage V: After HS pump nos. 1 and 2 are successfully installed, tested and accepted, uninstall existing HS pump at pedestal no. 3. Dewater and video inspect the pump can at pedestal no. 3. If necessary, sandblast and recoat can if found in poor condition. Install new HS pump no. 3, motor, valves, appurtenances and associated electrical work. Perform all required acceptance testing on HS pump no. 3.
 6. Stage VI: Uninstall the remaining two old pumps at pedestal nos. 1 and 2. Dewater and video inspect the pump cans; sandblast and recoat if necessary. Reinstall two old pumps to their respective pedestals (do not dispose) and reconnect to existing piping. Dispose of existing HSP no. 3.
 7. Stage VII: Perform site remediation to all areas impacted by construction.

1.5 TIE-INS

- A. Table 01 14 16-A in this Section lists connections by CONTRACTOR to existing facilities. Table 01 14 16-A may not include all tie-ins required for the Work; CONTRACTOR shall perform tie-ins required to complete the Work. For tie-ins not included in Table 01 14 16-A, obtain requirements for tie-ins from ENGINEER.

1.6 SHUTDOWNS

A. General:

1. Terminology: A “shutdown” is when a portion of the normal operation of OWNER’s facility, whether equipment, systems, piping, or conduit, has to be temporarily suspended or taken out of service to perform the Work.
2. Work that may interrupt normal operations shall be accomplished at times convenient to OWNER.
3. Furnish at the Site, in close proximity to the shutdown and tie-in work areas, tools, equipment, spare parts and materials, both temporary and permanent, necessary to successfully complete the shutdown. Complete to the extent possible, prefabrication of piping and other assemblies prior to the associated shutdown. Demonstrate to ENGINEER’s satisfaction that CONTRACTOR has complied with these requirements before commencing the shutdown.
4. If CONTRACTOR’s operations cause an unscheduled interruption of OWNER’s operations, immediately re-establish satisfactory operation for OWNER.
5. Unscheduled shutdowns or interruptions of continued safe and satisfactory operation of OWNER’s facilities that result in fines or penalties by authorities having jurisdiction shall be paid solely by CONTRACTOR if, in ENGINEER’s opinion, CONTRACTOR did not conform to the requirements of the Contract Documents, or was negligent in the Work, or did not exercise proper precautions in conducting the Work.
6. Shutdowns shall be in accordance with Table 01 14 16-B of this Section. Work requiring service interruptions for tie-ins shall be performed during scheduled shutdowns.
7. Temporary, short-term shutdowns of smaller piping, conduits, equipment, and systems may not be included in Table 01 14 16-B. Coordinate requirements for such shutdowns with ENGINEER and OWNER.

- B. Shutdowns of Electrical Systems: Comply with Laws and Regulations, including the National Electric Code. CONTRACTOR shall lock out and tag circuit breakers and switches operated by OWNER and shall verify that affected cables and wires are de-energized to ground potential before shutdown Work is started. Upon completion of shutdown Work, remove the locks and tags and notify ENGINEER that facilities are available for use.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 DETAILED SHUTDOWN REQUIREMENTS

- A. Shutdown A:
 - 1. General:
 - a. Affected Equipment Operating Prior to Shutdown: High Service Pump Station.
 - b. Equipment Operating During Shutdown: Full plant except High Service Pump Station. Elevated storage tanks will be used for distribution (shutdown not to exceed 4 hours) while high service pumps are shutdown.
 - c. Equipment Out of Service During Shutdown: High Service Pumps and appurtenances.
 - d. Procedure: Partial system shutdown.
 - 2. Prior to Shutdown:
 - a. Obtain ENGINEER's acceptance of proposed shutdown planning submittal and shutdown notification submittal.
 - b. Bring necessary piping, couplings, valves, equipment, and appurtenances to the work areas.
 - c. Assist OWNER in preparing to take equipment and conduits temporarily out of service.
 - d. Coordinate other tie-ins to be performed simultaneously.
 - 3. During Shutdown:
 - a. Rewire and install the new junction box for the pump pressure switches.

3.2 SCHEDULES

- A. The schedules listed below, following the "End of Section" designation, are part of this Specification section:
 - 1. Table 01 14 16-A, Schedule of Tie-ins.
 - 2. Table 01 14 16-B, Schedule of Shutdowns.

+ + END OF SECTION + +

**TABLE 01 14 16-A
SCHEDULE OF TIE-INS**

Tie-In No.	New Line Size and Service	Existing (Connecting) Line Size & Service	Tie-In Building/Location	Construction Stage	Remarks
1	16" high service pump discharge piping	Existing 16" high service pump discharge pipe downstream of isolation gate valve	HSP Canopy Structure	IV, V	

**TABLE 01 14 16-B
SCHEDULE OF SHUTDOWNS**

Shut-down No.	Process Equipment and Service Lines Out-of-Service During Shutdown	Process Equipment In Operation During Shutdown	Stage Nos.	Maximum Duration
A	High Service Pump Station	Full Plant	II	4 hours