



CITY OF VENICE, FLORIDA

Purchasing Department

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

Invitation to Bid

ITB Number 3082-18

Date of Issue: June 16, 2018

Submission Deadline: July 18, 2018_ at 2:00 PM

Title and Purpose of ITB:

East Gate Water Main Replacement – Phase 1

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**CITY OF VENICE
EAST GATE WATER MAIN REPLACEMENT – PHASE 1**

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SEALS AND CERTIFICATIONS PAGE

Douglas R. Young, P.E.
License No. 44204

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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.: 3082-18

Bid Title: East Gate Water Main Replacement – Phase 1

PROJECT DESCRIPTION: The Contractor shall furnish all labor, materials, equipment, tools, services and incidentals to complete all work required by these Specifications and as shown on the Drawings. The Contractor shall perform the work complete, in place and ready for continuous service, and shall include repairs, testing, permits, clean-up, replacements and restoration required as a result of damages caused during this construction. All materials, equipment, skills, tools and labor which is reasonably and properly inferable and necessary for the proper completion of the work in a substantial manner and in compliance with the requirements stated or implied by these Specifications or Drawings shall be furnished and installed by the Contractor without additional compensation, whether specifically indicated in the Contract Documents or not. The Contractor shall comply with all Municipal, County, State, Federal, and other codes which are applicable to the proposed construction work.

The project is bound by Venice Avenue to the North, Groveland Avenue to the south, Home Park Road to the east and US 41 to the west.

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: July 18, 2018 at 2:00 PM

PRE-BID MEETING: YES **DATE & TIME:** June 27, 2018 at 2:00 PM

LOCATION: City of Venice Eastside Water Reclamation Facility 3510 East Laurel Road, Nokomis, FL 34275

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 June 27, 2018 at 2:00 p.m., City of Venice Eastside Water Reclamation Facility 3510 East Laurel Road, Nokomis, FL 34275. 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 July 6, 2018 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 # 3082-18: “East Gate Water Main Replacement – Phase 1”** 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: June 16, 2018
June 20, 2018

City of Venice Utilities Department
City of Venice, Florida

East Gate Water Main Replacement – Phase 1

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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 01100, 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 01330, Submittals and Acceptance, 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 # 3082-18: “East Gate Water Main Replacement – Phase 1”**. 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 N/A

- ~~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. In the event the local office is not the primary location of the vendor, at least ten percent of the vendor's full time employees must be based at the local office location, and at least one corporate officer, managing partner or principal owner of the vendor must reside in Sarasota, Manatee, DeSoto or Charlotte County.~~

~~29.04 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.~~

~~29.05 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.~~

~~29.06 Information regarding Sarasota County's Local Business Tax can be found at www.sarasotataxcollector.governmax.com.~~

~~29.07 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: Jones Edmunds
7230 Kyle Court
Sarasota, Florida 34240

+ + END OF INSTRUCTIONS TO BIDDERS + +

BID FORM

CITY OF VENICE EAST GATE WATER MAIN REPLACEMENT – PHASE 1

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):

EAST GATE TERRACE WATER MAIN REPLACEMENT PROJECT – PHASE 1 BID SCHEDULE

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
1	Mobilization/Demobilization	LS	1		\$
2	Environmental Protection	LS	1		\$
3	Maintenance of Traffic	LS	1		\$
4	Grout and Abandon Existing Water Main				
4a	4-inch AC Water Main	LF	6,210	\$	\$
4b	8-inch PVC Water Main	LF	150	\$	\$
4c	Asbestos Cement Pipe Removal and Disposal	LF	100	\$	\$
5	Water Main				
5a	6-inch by Horizontal Directional Drilling	LF	3,737	\$	\$
5b	6-inch by Open Cut	LF	337	\$	\$
6	Water Service - Main to Meter				
6a	Short Side				
6a1	Single	EA	24	\$	\$
6a2	Double	EA	6	\$	\$
6b	Long Side				
6b1	Single	EA	27	\$	\$
6b2	Double	EA	6	\$	\$
7	House Service Line - Meter to House	LF	6700	\$	\$
7a	Contractor/Property Owner Coordination	EA	70	\$	\$
8	Relocate Reduced Pressure Principal Assemblies	EA	7	\$	\$
9	Relocate Dual Check Valve Assemblies	EA	24	\$	\$
10	Fittings				
10a	4-inch DI Sleeve	EA	1	\$	\$
10b	4-inch DI 45° Bend	EA	2	\$	\$
10c	4-inch DI Cap	EA	7	\$	\$
10d	6-inch DI Sleeve	EA	1	\$	\$

10e	6-inch X 4-inch Reducer	EA	2	\$	\$
10f	6-inch DI Tee	EA	1	\$	\$
10g	6-inch DI 45° Bend	EA	10	\$	\$
10h	6-inch DI 90° Bend	EA	1	\$	\$
10i	8-inch DI Sleeve	EA	2	\$	\$
10j	8-inch DI 90° Bend	EA	2	\$	\$
11	Valves				
11a	4-inch Gate Valve	EA	2	\$	\$
11b	6-inch Gate Valve	EA	4	\$	\$
11c	6-inch Insertion Type Valve	EA	1	\$	\$
11d	8-inch Gate Valve	EA	1	\$	\$
12	6-inch Tapping Valve	EA	4	\$	\$
13	Fire Hydrant Assembly	EA	8	\$	\$
14	Auto Flusher	EA	1	\$	\$
15	Asphalt Pavement Restoration	SF	7782	\$	\$
16	Private Property Restoration				
16a	Sod	SF	8350	\$	\$
16b	Brick Pavers	SF	20	\$	\$
16c	Asphalt/Concrete Drive	SF	45	\$	\$
16d	Asphalt/Concrete Walkway	SF	375	\$	\$
16e	Loose Stone/Gravel	SF	105	\$	\$
16f	Landscaping	SF	1360	\$	\$
16g	Unavoidable Obstructions	EA	2	\$	\$
17	Record Drawings	LS	1		\$
18	Owner's Allowance	Allowance		\$ 100,000.00	\$ 100,000.00
19	Permit Fee Allowance	Allowance		\$ 15,000.00	\$ 15,000.00
		TOTAL (Items 1 through 19, inclusive)			\$

Total Base Bid in Words \$ _____

NAME OF BIDDER:_____

BIDDER'S SIGNATURE:_____

CURRENT LICENSE NUMBER:_____

DATE: _____

- 5.02 Unit prices have been computed in accordance with Paragraph 11.03.B of the General Conditions.
- 5.03 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.
- 5.04 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 180 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 210 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# 3082-18: East Gate Water Main Replacement – Phase 1

- Proposal Bond
- 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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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 §112.317, 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

THIS PAGE MUST BE COMPLETED & SUBMITTED WITH OFFER

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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-Offers 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

ORDINANCE 96-09

AN ORDINANCE OF THE CITY OF VENICE, FLORIDA, AMENDING THE CODE OF ORDINANCES BY AMENDING CHAPTER 19, WATER AND SEWERS, ARTICLE VI, STORMWATER QUALITY, SECTION 19-141, DEFINITION FOR INDUSTRIAL STORMWATER, SECTION 19-146, INSPECTIONS, PROVIDING FOR CONFLICT WITH OTHER ORDINANCES; PROVIDING FOR A SEVERABILITY CLAUSE AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City of Venice is responsible for the conservation, management, protection, control, use and enhancement of stormwater within its corporate limits, and for the acquisition, management, maintenance, extension, and improvement of the stormwater systems in the City; and

WHEREAS, the Environmental Protection Agency/National Pollutant Discharge Elimination System (EPA/NPDES) permit requires certain amendments to the existing Ordinance and extension of inspection authority on private properties.

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

SECTION 1. Chapter 19, Water and Sewers, Article VI, Stormwater Quality, Section 19-141, Definition, for Industrial Stormwater is amended to read as follows:

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) (b) (14), U.S. Environmental Protection Agency regulation.

SECTION 2. Chapter 19, Water and Sewers, Article VI, Stormwater Quality, Section 19-146, Inspections, is amended to read as follows:

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. The city engineer or his duly authorized agents may enter at all reasonable times in or upon any private or public property for the purpose of inspecting and investigating conditions and practices which may be a violation of this ordinance, regulation or permit. The city engineer may, whenever necessary, make an inspection of construction sites to enforce any of the provisions of this ordinance, regulation or permit issued hereunder, or whenever an authorized official has reasonable cause to believe there exists any condition constituting a violation of this ordinance, regulation or permit issued hereunder. The city engineer shall inspect the work and shall require the owner to obtain services to provide adequate on-site inspection. If the city engineer finds that eroded soils are leaving the construction site, the city engineer may direct the owner(s) or his agents or his contractor on the site by written order to install any and all erosion controls that are deemed necessary to prevent said soil erosion from migrating off site. Notwithstanding the existence or pursuit of any other remedy, the City may maintain an action in its own name in any court of competent jurisdiction for an injunction or other process against any person to restrain or prevent violations of this ordinance.

SECTION 3. 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 4. 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 5. 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 26TH DAY OF MARCH, 1996.

First Reading: March 12, 1996 - Final Reading: March 26, 1996 - ADOPTION: March 26, 1996

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 26th day of March, 1996, a quorum being present.

WITNESS my hand and the official seal of said City this 27th day of March, 1996.

/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
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

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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: _____

Date: _____

Phone: _____

Fax: _____

Federal ID#: _____

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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: **July 18, 2018 at 2:00 PM**

Bid Number: **3082-18**

Description: The project will relocate existing water mains from the backyard easements to within the ROW and re-establish the service connections to the residences. The project will include the installation of approximately 4,000 LF of new water main; abandonment of approximately 6,500 LF of rear lot water mains and the relocation of approximately 70 water services.

Contact: _____, 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 _____ Vendor No. _____

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) # **3082-18 East Gate Water Main Replacement – Phase 1**, including: standard general conditions, supplemental conditions, special conditions, technical specifications, drawings, Contractor's bid proposal for ITB 3082-18, 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 and Ten (210)** 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) Contractor agrees to comply with Florida's public records law by keeping and maintaining public records that ordinarily and necessarily would be required by the public agency in order to perform the Services under this Agreement; upon the request of the City's Custodian of Public Records, by providing the City with copies of or access to public records on the same terms and conditions that City would provide the records and at a cost that does not exceed the cost provided by Florida law; by ensuring that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed excepts as authorized by law for the duration of the term of the Contract and following completion of the Contract if the Contractor does not transfer the records to the City; and upon completion of the Contract by transferring, at no cost, to City all public records in possession of Contractor or by keeping and maintaining all public records required by the City to perform the Services under this Agreement. If the Contractor transfers all public records to the City upon completion of the Contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the Contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the City, upon request from the City's custodian of public records, in a format that is compatible with the information technology systems of the City.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CITY'S CUSTODIAN OF PUBLIC RECORDS LORI STELZER, MMC, CITY CLERK, AT 401 W. VENICE AVENUE, VENICE, FLORIDA 34285, (941) 882-7390, LSTELZER@VENICEGOV.COM.

(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# 3082-18 East Gate Water Main Replacement – Phase 1** 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# 3082-18 East Gate Water Main Replacement – Phase 1** 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** for **Commercial General Liability** and **Business Auto Policy**.
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 # 3082-18, 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:

East Gate Water Main Replacement – Phase 1

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
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>

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: _____

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 + +

ATTACHMENT A

SCHEDULE A PROJECTS IN PROGRESS

[illegible]

ATTACHMENT B

SCHEDULE B
PROJECTS COMPLETED

<u>Name, Location and Description of Project</u>	<u>Owner</u>	<u>Architect or Engineer</u>	<u>Date Completed</u>	<u>Contract Price</u>	<u>Percent with Own Forces</u>	<u>Reference/Contract Include Address and</u>
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[illegible]

ATTACHMENT C

SCHEDULE C
PERSONNEL

[illegible]

GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT

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

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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 ++

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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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SUPPLEMENTARY CONDITIONS (CONSTRUCTION)

Florida Department of Environmental Protection
State Revolving Fund Program
Supplementary Conditions
for

Formally Advertised
Construction Procurement

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ENVIRONMENTAL PROTECTION
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FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION SUPPLEMENTARY CONDITIONS

The intent of the Florida Department of Environmental Protection (FDEP) Supplementary Conditions is to complement and supplement other provisions of the Bidding Documents. However, if there is any conflict between the FDEP Supplementary Conditions and other provisions of the Bidding Documents, the FDEP Supplementary Conditions shall take precedence over the other provisions except when the other provisions are similar to, but more stringent than, the FDEP Supplementary Conditions. When other provisions of the Bidding Documents are similar to, but more stringent than, the FDEP Supplementary Conditions, the more stringent provisions shall apply.

ARTICLE 1 - DEFINITIONS

Wherever used in these Supplementary Conditions (except in the appendices to these Supplementary Conditions), the following terms have the meanings indicated, which are applicable to both the singular and plural thereof.

- 1.1 Addendum - A written or graphic instrument that is issued prior to the opening of bids and that clarifies, corrects, or changes the Bidding Documents.
- 1.2 Agreement or Contract - The written agreement between the Owner and the Contractor covering the Work to be performed and furnished; these Supplementary Conditions and other Contract Documents are attached to the Agreement/Contract and made a part thereof as provided therein.
- 1.3 Bid - The offer or proposal of a bidder submitted on the prescribed form and setting forth the price(s) for the Work to be performed and furnished.
- 1.4 Bidder - Any person, firm, or corporation that submits a bid directly to the Owner.
- 1.5 Bidding Documents - The Advertisement for Bids or the Invitation to Bid, the Instructions to Bidders or the Information for Bidders, the Bid Form, the proposed Contract Documents, and all addenda.
- 1.6 Bond - An instrument of security.
- 1.7 Change Order - A document that is recommended by the Engineer and signed by the Contractor and the Owner; that authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Time; and that is issued on or after the Effective Date of the Agreement/Contract.
- 1.8 Contract Documents - The Agreement/Contract; the Contractor's Bid when attached as an exhibit to the Agreement/Contract; the Performance and Payment Bond(s); the General Conditions; the Supplementary Conditions (including these Supplementary Conditions); the Specifications (written technical descriptions of material, equipment, construction systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto); the Drawings (drawings that show the character and scope of the Work to be performed and furnished); all addenda that pertain to the Contract Documents; and all change orders.
- 1.9 Contract Time - The number of days or the date stated in the Contract Documents for completion of the Work.
- 1.10 Contractor - The person, firm, or corporation with whom or which the Owner enters into the Agreement/Contract.
- 1.11 Effective Date of the Agreement/Contract - The date indicated in the Agreement/Contract on which the Agreement/Contract becomes effective, or if no such date is indicated in the Agreement/Contract, the date on which the Agreement/Contract is signed and delivered by the last of the two parties to sign and deliver the Agreement/Contract.
- 1.12 Engineer - The person, firm, or corporation named as such in the Contract Documents.
- 1.13 Minority Business Enterprise (MBE) - A historically Black college or university or a business that is (a) certified as socially and economically disadvantaged by the Small Business Administration, (b) certified as an MBE by a state or federal agency, or (c) an independent business concern which is at least 51-percent owned and controlled by minority group members. (A minority group member is an individual who is a citizen of the United States and one of the following: [i] Black American; [ii] Hispanic American [with origins from Puerto Rico, Mexico, Cuba, or South or Central America]; [iii] Native American [American Indian, Eskimo, Aleut, or native Hawaiian]; or [iv] Asian-Pacific American

[with origins from Japan, China, the Philippines, Vietnam, Korea, Samoa, Guam, the U.S. Trust Territories of the Pacific, Northern Marianas, Laos, Cambodia, Taiwan, or the Indian Subcontinent].)

1.14 Notice to Proceed -The written notice given by the Owner to the Contractor fixing the date on which the Contract Time will commence to run and on which the Contractor shall start to perform its obligations under the Contract Documents.

1.15 Owner - The local government (municipality, county, district, or authority; or any agency thereof; or a combination of two or more of the foregoing acting jointly) with which the Florida Department of Environmental Protection (FDEP) may execute, or has executed, a State Revolving Fund loan agreement and for which the Work is to be provided.

1.16 Project - The total construction or facilities described in a State Revolving Fund loan agreement between the FDEP and the Owner, of which the Work to be provided under the Contract Documents may be the whole or a part.

1.17 Sponsor – The recipient of the State Revolving Fund loan agreement that provides funds for the project.

1.18 Subcontract - A direct contract between a subcontractor and the Contractor, or any other subcontractor at any tier, for the furnishing of goods (material and equipment) or the performance of services (including construction) necessary to complete the Work.

1.19 Subcontractor - A person, firm, or corporation having a direct contract with the Contractor, or any other subcontractor at any tier, for the furnishing of goods (material and equipment) or the performance of services (including construction) necessary to complete the Work.

1.20 Successful Bidder - The lowest responsive, responsible bidder to whom or which the Owner intends to award the Agreement/Contract.

1.21 Women's Business Enterprise (WBE) - A business that is (a) certified as a WBE by a state or federal agency or (b) an independent business concern which is at least 51-percent owned and controlled/operated by women. (Determination of whether a business is at least 51-percent owned by women shall be made without regard to community property laws [e.g., an otherwise qualified WBE that is 51-percent owned by a married woman in a community property state will not be disqualified because the married woman's husband has a 50-percent interest in the married woman's share of the business; similarly, a business that is 51-percent owned by a married man and 49-percent owned by women will not become a qualified WBE by virtue of the married man's wife having a 50-percent interest in the married man's share of the business].)

1.22 Work - The entire completed construction or the various separately identifiable parts thereof required to be performed and furnished under the Contract Documents; Work is the result of performing services, furnishing labor, furnishing material and equipment, and incorporating material and equipment into the construction as required by the Contract Documents.

ARTICLE 2 - PRIVACY OF AGREEMENT/CONTRACT

2.1. The Owner expects to finance this Agreement/Contract with assistance from the FDEP, which administers a State Revolving Fund loan program supported in part with funds directly made available by grants from the United States Environmental Protection Agency (USEPA). Neither the State of Florida nor the United States (nor any of their departments, agencies, or employees) will be a party to this Agreement/Contract or any lower-tier subcontract.

ARTICLE 3 - PROCUREMENT REQUIREMENTS

3.1. This Agreement/Contract and the Owner's solicitation and award of this Agreement/Contract are subject to requirements contained in Chapter 62-503 (Revolving Loan Program) and/or Chapter 62-552, Florida Administrative Code as applicable.

ARTICLE 4 - RESOLUTION OF PROTESTS AND CLAIMS/DISPUTES

Resolution of Protests Concerning the Owner's Solicitation and/or Award of this Agreement/Contract:

4.1. Protests concerning the Owner's solicitation and/or award of this Agreement/Contract must be filed in writing with the Owner to be considered.

4.2. All timely written protests concerning the Owner's solicitation and/or award of this Agreement/Contract are to be resolved in accordance with the Owner's dispute resolution process. A copy of the ordinance(s), resolution(s), or written policy (policies) that set forth the Owner's dispute resolution process is included elsewhere in the Bidding Documents or is to be made available by the Owner upon request.

4.3. Neither the (FDEP) nor the USEPA will become a party to, or have any role in resolving, protests concerning the Owner's solicitation and/or award of this Agreement/Contract. Protest decisions made by the Owner cannot be appealed to the FDEP or the USEPA.

Resolution of Claims and Disputes Between the Owner and the Contractor:

4.4. Unless otherwise provided in the Contract Documents, all claims and disputes between the Owner and the Contractor arising out of, or relating to, the Contract Documents or the breach thereof are to be decided by arbitration (if the Owner and the Contractor mutually agree) or in a court of competent jurisdiction within the State of Florida.

4.5. Neither the FDEP nor the USEPA will become a party to, or have any role in resolving, claims and disputes between the Owner and the Contractor.

ARTICLE 5 - CHANGES TO THE BIDDING AND CONTRACT DOCUMENTS

5.1. All changes to the Bidding Documents made subsequent to the FDEP's acceptance of the Bidding Documents and prior to the opening of bids are to be documented via addendum (addenda) to the Bidding Documents; all changes to the Contract Documents made after the opening of bids are to be documented by change order(s) to the Contract Documents. The Owner shall submit all addenda and change orders to the FDEP.

ARTICLE 6 - BONDS AND INSURANCE

Bid Guarantees:

6.1. Each bidder's bid is to be accompanied by a bid guarantee made payable to the Owner in an amount at least equal to five percent of the bidder's maximum bid price and in the form of a certified check or bid bond.

Performance and Payment Bond(s):

6.2. The Contractor shall furnish a combined performance and payment bond in an amount at least equal to 100 percent of the Contract Price (or, if required elsewhere in the Contract Documents, the Contractor shall furnish separate performance and payment bonds, each in an amount at least equal to 100 percent of the Contract Price) as security for the faithful performance and payment of all the Contractor's obligations under the Contract Documents. This(these) bond(s) are to be delivered to the Owner by the Contractor along with the executed Agreement/Contract. The Owner shall forward a copy of this (these) bond(s) to the FDEP.

Insurance:

6.3. The Owner and/or the Contractor (as required elsewhere in the Contract Documents) shall purchase and maintain, during the period of construction, such liability insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims that may arise out of, or result from, the Contractor's performance and furnishing of the Work (whether the Work is to be performed or furnished by the Contractor or any subcontractor at the Work site) and the Contractor's other obligations under the Contract Documents. This insurance is to include workers' compensation insurance, comprehensive general liability insurance, comprehensive automobile liability insurance, and contractual liability insurance applicable to the Contractor's indemnification obligations and is to be written for not less than the limits of liability and coverages determined by the Owner or required by law, whichever is greater.

6.4. The Owner and/or the Contractor (as required elsewhere in the Contract Documents) shall purchase and maintain, during the period of construction, property insurance upon the Work at the Work site in an amount equal to the full replacement cost of the Work or the full insurable value of the Work. This insurance is to include the interests of the Owner, the Contractor, and all subcontractors at the Work site (all of whom are to be listed as insured or additional insured parties); is to insure against the perils of fire and extended coverage; and is to include "all-risk" insurance for physical loss or damage due to theft, vandalism and malicious mischief, collapse, water damage, and/or all other risks against which coverage is obtainable.

6.5. Before any Work at the Work site is started, the Contractor shall deliver to the Owner certificates of insurance that the Contractor is required to purchase and maintain in accordance with Paragraphs 6.3 and 6.4 of this Article and other provisions of the Contract Documents, and the Owner shall deliver to the Contractor certificates of insurance that the Owner is required to purchase and maintain in accordance with Paragraphs 6.3 and 6.4 of this Article and other provisions of the Contract Documents.

ARTICLE 7 - AWARD OF AGREEMENT/CONTRACT

7.1. If this Agreement/Contract is awarded, it is to be awarded to the lowest responsive, responsible bidder. A fixed price (lump sum or unit price or both) agreement/contract is to be used. A clear explanation of the method of evaluating bids and the basis for awarding this Agreement/Contract are included elsewhere in the Bidding Documents. All bids may be rejected when in the best interest of the Owner. After the contract has been awarded, the Owner shall give the Contractor a notice to proceed fixing the date on which the Contract Time will commence to run. The Owner shall forward a copy of this notice to proceed to the FDEP.

ARTICLE 8 - ITEMIZED CONSTRUCTION COST BREAKDOWN; CONSTRUCTION AND PAYMENT SCHEDULES

8.1. The Contractor shall submit to the Owner, within ten calendar days after the Effective Date of this Agreement/Contract, an itemized construction cost breakdown and construction and payment schedules.

8.1.1. The itemized construction cost breakdown, or schedule of values, is to include quantities and prices of items aggregating the Contract Price and is to subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices are to include an appropriate amount of overhead and profit applicable to each item of Work.

8.1.2. The construction, or progress, schedule is to indicate the Contractor's estimated starting and completion dates for the various stages of the Work and is to show both the projected cost of Work completed and the projected percentage of Work completed versus Contract Time.

8.1.3. The payment schedule is to show the Contractor's projected payments cumulatively by month.

ARTICLE 9 – FDEP/USEPA ACCESS TO RECORDS AND PROJECT SITE

9.1. Authorized representatives of the Owner, the FDEP, and the USEPA shall have access to, for the purpose of inspection, the Work site(s), any books, documents, papers, and records of the Contractor that are pertinent to this Agreement/Contract at any reasonable time. The Contractor shall retain all books, documents, papers, and records pertinent to this Agreement/Contract for a period of five years after receiving and accepting final payment under this Agreement/Contract.

NOTE: ARTICLE 10 ONLY APPLIES TO FEDERAL CAP GRANT PROJECTS

ARTICLE 10 - DISADVANTAGED BUSINESS ENTERPRISES

10.1 A goal of five percent of the Contract Price is established for Minority Business Enterprise (MBE) participation in the Work, and a goal of five percent of the Contract Price is established for Women's Business Enterprise (WBE) participation in the Work. If bidders or prospective contractors (including the Contractor) intend to let any lower-tier goods

or services (including construction) subcontracts for any portion of the Work, they shall physically include these percentage goals for MBE and WBE participation in all solicitations for subcontracts and shall take good faith efforts to assure that MBEs and WBEs are utilized, when possible, as sources of goods and services. Good faith efforts are to include the following:

10.1.1. Require Disadvantaged Business Enterprises (DBEs) are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For Indian Tribal, State and Local and Government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.

10.1.2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.

10.1.3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For Indian Tribal, State and local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.

10.1.4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.

10.1.5. Use the services and assistance of the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

10.1.6. If the prime contractor awards subcontracts, require the prime contractor to take the steps in paragraphs 10.1.1 through 10.1.5 of this section.

10.2. Within ten calendar days after being notified of being the apparent Successful Bidder, the apparent Successful Bidder shall submit to the Owner documentation of the affirmative steps it has taken to utilize Minority and Women's Business Enterprises (MBEs and WBEs) in the Work and documentation of its intended use of MBEs and WBEs in the Work. The Owner shall keep this documentation on file and shall forward to the FDEP a copy of the apparent Successful Bidder's documentation concerning its intended use of MBEs and WBEs in the Work.

ARTICLE 11 - DEBARMENT AND SUSPENSION (EXECUTIVE ORDER 12549)

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions

11.1. The bidder certifies, by submission of this proposal, that neither the bidder nor its principals, nor the bidder's subcontractors nor their principals, are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department or agency.

11.2. Where the bidder is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

11.3. The bidder also certifies that it and its principals and the bidder's subcontractors and their principals:

11.3.1. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; violation of federal or state anti-trust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

11.3.2. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state or local) with commission of any of the offenses enumerated in paragraph 11.3.1 of this certification; and

11.3.3. Have not within a three-year period preceding this proposal had one or more public transactions (federal, state or local) terminated for cause or default. Where the bidder is unable to certify to any of the above, such owner shall attach an explanation to this proposal.

11.3.4. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the federal government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

11.3.5. The bidder shall incorporate the foregoing requirements 11.1 through 11.3 in all subcontracts.

ARTICLE 12 - EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

12.1. Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246). (Applicable to contracts/subcontracts exceeding \$10,000)

12.1.1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

12.1.2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in Florida, are as follows:

Goal for female participation: 6.9 percent statewide

Goal for minority participation: (See Appendix B at FDEP-20 for goals for each county)

These goals are applicable to all the Contractor's construction work (whether or not it is federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

12.1.3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

12.1.4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is the State of Florida.

12.1.5. Contractors shall incorporate the foregoing requirements in all subcontracts.

12.2. Equal Opportunity Clause (Applicable to contracts/subcontracts exceeding \$10,000)

During the performance of this contract, the contractor agrees as follows:

12.2.1. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor shall take affirmative action to ensure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

12.2.2. The Contractor shall post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause. The notice can be obtained online at http://www.eeoc.gov/employers/upload/eeoc_self_print_poster.pdf. The Contractor shall state that all qualified applicants be considered without regard to race, color, religion, sex or national origin.

12.2.3. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.

12.2.4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

12.2.5. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

12.2.6. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

12.2.7. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

12.2.8. The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs 12.2.1 through 12.2.8 in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

12.3. The Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)

12.3.1. As used in these specifications:

- a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
- b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
- c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
- d. "Minority" includes:
 - (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
 - (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
 - (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

(iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

12.3.2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

12.3.3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

12.3.4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction Contractors performing construction work in geographical areas where they do not have a federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the FEDERAL REGISTER in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

12.3.5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

12.3.6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

12.3.7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

- a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
- b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

- c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.
- d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
- e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 12.3.7b above.
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
- i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
- j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
- k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
- l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
- m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

- n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

12.3.8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (12.3.7a through 12.3.7p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

12.3.9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

12.3.10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

12.3.11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12.3.12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

12.3.13. The Contractor, in fulfilling its obligation under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

12.3.14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

12.3.15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

12.4. Pursuant to 41 CFR 60-1.7, if the price of this bid exceeds \$10,000, the bidder, by signing and submitting this proposal, certifies the following:

- 12.4.1. Affirmative action programs pursuant to 41 CFR 60-2 have been developed and are on file;
- 12.4.2. Documentation of a previous contract or subcontract subject to the equal opportunity clause is available;
- 12.4.3. All reports due under the applicable filing requirements have been filed with the Joint Reporting Committee, the Deputy Assistant Secretary or the Equal Employment Opportunity Commission; and
- 12.4.4. Each prospective construction subcontractor that may be awarded a lower-tier construction subcontract with a price exceeding \$10,000 shall meet the above requirements 12.4.1 through 12.4.3.

12.5. Pursuant to 41 CFR 60-1.8, if the price of this bid exceeds \$10,000, the bidder, by signing and submitting this proposal, certifies the following:

- 12.5.1. That he/she does not maintain or provide for his/her employees any segregated facility at any of his/her establishments;
- 12.5.2. That he/she does not permit employees to perform their services at any location, under his/her control, where segregated facilities are maintained;
- 12.5.3. That he/she will not maintain or provide for employees any segregated facilities at any of his/her establishments;
- 12.5.4. That he/she will not permit employees to perform their services at any location under his/her control where segregated facilities are maintained;
- 12.5.5. That a breach of this certification is violation of the Equal Opportunity Clause of this contract; and
- 12.5.6. That he/she will obtain identical certifications from proposed Subcontractors prior to the award of Subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his/her files.

As used in this certification, the term “segregated facilities” means any waiting rooms, work eating areas, time clocks, locker rooms, and other storage or dressing areas, transportation and housing facilities provided for employees which are in fact segregated on the basis of race, color, religion, or otherwise.

12.6. If the price of this Agreement/Contract exceeds \$10,000, the Owner shall give written notice to the Director of the Office of Federal Contract Compliance Programs within ten working days of award of this Agreement/Contract. The notice is to include the name, address, and telephone number of the Contractor; the employer identification number of the Contractor; the dollar amount of this Agreement/Contract; the estimated starting and completion dates of this Agreement/Contract; the number of this Agreement/Contract; and the geographical area in which the Work is to be performed.

12.7. If the price of this Agreement/Contract equals or exceeds \$50,000 and if the Contractor has 50 or more employees, the Contractor shall electronically file Standard Form 100 (EEO-1) online at <https://egov.eeoc.gov/eeo1/eeo1.jsp> within 30 calendar days after the award of this Agreement/Contract, unless the Contractor has submitted such a report within 12 months preceding the date of award of this Agreement/Contract. In addition, the Contractor shall ensure that each construction subcontractor having 50 or more employees and a lower-tier construction subcontract with a price equaling or exceeding \$50,000 also electronically files this form within 30 calendar days after the award to it of the lower-tier construction subcontract, unless the construction subcontractor has submitted such a report within 12 months preceding the date of award of the lower-tier construction subcontract.

ARTICLE 13 - IMMIGRATION REFORM AND CONTROL ACT OF 1986 (STATE OF FLORIDA EXECUTIVE ORDER 11-116)

The Immigration Reform and Control Act of 1986 prohibits employers from knowingly hiring illegal workers. The Contractor shall only employ individuals who may legally work in the United States – either U.S. citizens or foreign citizens who are authorized to work in the U.S. The Contractor shall use the U.S. Department of Homeland Security's E-Verify Employment Eligibility Verification system (<http://www.uscis.gov/portal/site/uscis>) to verify the employment eligibility of:

- all new employees, during the term of this Agreement, to perform employment duties within Florida; and,
- all new employees (including subcontractors and subrecipients) assigned by the Contractor to perform work pursuant to this Agreement.

The Contractor shall include this provision in all subcontracts/subgrants it enters into for the performance of work under this Agreement.

ARTICLE 14 – ENVIRONMENTAL COMPLIANCE

The Contractor, and all subcontractors at any tier, shall comply with all applicable standards, orders, or requirements issued under Section 306 of the Clean Air Act (42 U.S.C. 1857[h]), Section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738 (Administration of the Clean Air Act and the Federal Water Pollution Control Act with Respect to Federal Contracts, Grants, or Loans).

ARTICLE 15 – FEDERAL LABOR STANDARDS PROVISION

Contracts being constructed with assistance from the State Revolving Fund Program are currently required to comply with the Federal Labor Standards Provisions as provided in Appendix C. Signing Appendix A certifies compliance with these provisions.

ARTICLE 16 – AMERICAN IRON AND STEEL PROVISION

Contracts being constructed with assistance from the State Revolving Fund Program are currently required to comply with The American Iron and Steel Provision as provided in Appendix D. Signing Appendix A certifies compliance with these provisions.

ARTICLE 17 - PROHIBITED LOCAL GOVERNMENT CONSTRUCTION PREFERENCES

- A. Pursuant to Section 255.0991, F.S., for a competitive solicitation for construction services in which 50 percent or more of the cost will be paid from state-appropriated funds which have been appropriated at the time of the competitive solicitation, a state, college, county, municipality, school district, or other political subdivision of the state may not use a local ordinance or regulation that provides a preference based upon:
1. The contractor's maintaining an office or place of business within a particular local jurisdiction;
 2. The contractor's hiring employees or subcontractors from within a particular local jurisdiction; or
 3. The contractor's prior payment of local taxes, assessments, or duties within a particular local jurisdiction.
- B. For any competitive solicitation that meets the criteria in Paragraph A., a state college, county, municipality, school district, or other political subdivision of the state shall disclose in the solicitation document that any applicable local ordinance or regulation does not include any preference that is prohibited by Paragraph A.

**APPENDIX A TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SUPPLEMENTARY CONDITIONS**

**CERTIFICATION OF COMPLIANCE WITH THE FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION SUPPLEMENTARY CONDITIONS**

This certification relates to a construction contract proposed by _____,
(insert the name of the Owner)

which expects to finance the proposed construction contract with assistance from the Florida Department of Environmental Protection (which administers a State Revolving Fund loan program supported in part with funds directly made available by grants from the United States Environmental Protection Agency). I am the undersigned prospective construction contractor or subcontractor.

I certify that I have read the Florida Department of Environmental Supplementary Conditions and agree to incorporate the following articles into the bid and/or contract:

- ARTICLE 11 DEBARMENT AND SUSPENSION (EXECUTIVE ORDER 12549)
- ARTICLE 12 EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)
- ARTICLE 13 IMMIGRATION REFORM AND CONTROL ACT OF (STATE OF FLORIDA EXECUTIVE ORDER 11-116)
- ARTICLE 14 ENVIRONMENTAL COMPLIANCE
- ARTICLE 15 FEDERAL LABOR STANDARDS PROVISION
- ARTICLE 16 AMERICAN IRON AND STEEL PROVISION

I agree that I will obtain identical certifications from prospective lower-tier construction subcontractors prior to the award of any lower-tier construction subcontracts with a price exceeding \$2,000. I also agree that I will retain such certifications in my files.

(Signature of Authorized Official)

(Date)

(Name and Title of Authorized Official [Print or Type])

(Name of Prospective Construction Contractor or Subcontractor [Print or Type])

(Address and Telephone Number of Prospective Construction Contractor or Subcontractor [Print or Type])

(Employer Identification Number of Prospective Construction Contractor or Subcontractor)

APPENDIX B TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION SUPPLEMENTARY CONDITIONS

GOALS AND TIMETABLES FOR MINORITIES AND FEMALES

[Note: These goals and timetables are the goals and timetables referred to in Paragraph 2 of the "Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)"; these goals and timetables are to be included in all FDEP assisted construction contracts and subcontracts with a price exceeding \$10,000 and in all solicitations for such contracts and subcontracts.]

The following goals and timetables for female utilization shall be included in all federal and federally assisted construction contracts and subcontracts in excess of \$10,000. The goals are applicable to the contractor's aggregate on-site construction workforce whether or not part of that workforce is performing work on a federal or federally assisted construction contract or subcontract.

Area covered: Goals for Women apply nationwide.

Goals and Timetables

Timetable	Goals (percent)
Indefinite	6.9

Goals for minority utilization can be found in the Department of Labor's Technical Assistance Guide for Federal Construction Contractors (May 2009), available on the internet at <http://www.civilrightsusa.gov/pdf/TAG%20-%20Constuction.pdf> . These goals shall be included for each craft and trade in all federal or federally assisted construction contracts and subcontracts in excess of \$10,000 to be performed in the respective geographical areas. The goals are applicable to each nonexempt contractor's total onsite construction workforce, regardless of whether or not part of that workforce is performing work on a federal, federally assisted or non-federally related project, contract or subcontract.

Construction contractors which are participating in an approved Hometown Plan (see 41 CFR 60-4.5) are required to comply with the goals of the Hometown Plan with regard to construction work they perform in the area covered by the Hometown Plan. With regard to all their other covered construction work, such contractors are required to comply with the applicable SMSA or EA goal contained in this Appendix.

APPENDIX C
TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SUPPLEMENTARY CONDITIONS

Davis-Bacon Requirements

FEDERAL LABOR STANDARDS PROVISIONS

(Davis-Bacon Act, Copeland Act, and Contract Works Hours & Safety Standards Act)

The Project to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such federal assistance.

1 Minimum Wages.

(i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act, 29 CFR Part 3, the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein; provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR Part 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii) (a) The sponsor, on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The FDEP shall approve a request for an additional classification and wage rate and fringe benefits; therefore, only when the following criteria have been met:

- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (2) The classification is utilized in the area by the construction industry; and
- (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the sponsor(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the sponsor to the FDEP. The FDEP will transmit the request to the Administrator of the Wage and Hour Division, employment Standards Administration, U. S. Department of Labor. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional

classification action within 30 days of receipt and so advise the FDEP or will notify FEDP within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(c) In the event that the Contractor, the laborers or mechanics to be employed in the Classification or their representatives, and the sponsor do not agree on the proposed classification and wage rate (including the amount designed for fringe benefits, where appropriate), the FDEP shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of FDEP, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program. Provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account, assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. Withholding.

The sponsor shall, upon written request of the EPA or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, EPA may, after written notice to the contractor, sponsor, applicant, or owners, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and Basic Records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017).

(ii) (a) The contractor shall submit weekly for each week in which any contract work is performed, a copy of all payrolls to the sponsor. Such documentation shall be available upon request by FDEP. As to each payroll copy received, the sponsor shall provide a certification that the project is in compliance with the requirements of 29 CFR 5.5(a)(1) with each disbursement request. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR Part 5.5(a)(3)(I), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead, the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site <http://www.dol.gov/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current addresses of each covered worker, and shall provide them upon request to the sponsor for transmission to the FDEP or EPA if requested by EPA, the FDEP, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsor. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149).

(b) Each payroll submitted shall be accompanied by a Statement of Compliance, signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR Part 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR Part 5.5 (a)(3)(I), and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Option Form WH-347 shall satisfy the requirement for submission of the Statement of Compliance required by paragraph A. 3(ii)(b) of this section.

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph A.3(I) of this section available for inspection, copying, or transcription by authorized representatives of the FDEP or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FDEP may, after written notice to the contractor, or sponsor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request to make such records available may be grounds for debarment action pursuant to 29 CFR Part 5.12.

4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U. S. Department of Labor, the Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio

of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program, shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with the determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U. S. Department of Labor, the Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program the contract will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal Employment Opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act Requirements.

The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract.

6. Subcontracts.

The contractor or subcontractor will insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as EPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

7. Contract Termination, Debarment.

A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3 and 5 are herein incorporated by referenced in this contract.

9. Disputes Concerning Labor Standards.

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6 and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the sponsor, FDEP, EPA, the U. S. Department of Labor, or the employees or their representatives.

10. Certification of Eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded EPA contracts or participate in EPA programs pursuant to Executive Order 12549.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded EPA contracts or participate in EPA programs pursuant to Executive Order 12549.

(iii) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U. S. C. 1001. Additionally, U. S. Criminal Code, Section 1010, Title 18, U. S. C., Federal Housing Administration transactions, provides in part "Whoever, for the purpose of . . . influencing in any way the action of such Administration . . . makes, utters or publishes any statement, knowing the same to be false . . . shall be fined not more than \$5,000 or imprisoned not more than two years, or both".

11. Complaints, Proceedings, or Testimony by Employees.

A. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this contract are applicable shall be discharged or in any other manner discriminated against by the contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this contract to his employer.

B. Contract Work Hours and Safety Standards Act. The sponsor shall insert the following clauses set forth in paragraphs B.(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by item 3 above or 29 CFR 4.6. As used in the paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

(3) Withholding for unpaid wages and liquidated damages. The sponsor, upon written request of the FDEP or an authorized representative of the Department of Labor, may withhold or cause to be withheld, from any moneys payable on

account of work performed by the contractor or subcontractor under any such contract or any other federal contract with the same prime contract, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. Health and Safety

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 (formerly part 1518) and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (Public Law 91-54.83 State 96).

(3) The contractor shall include the provisions of this Article in every subcontract so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontract as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

12. Guidance to Contractor for Compliance with Labor Standards Provisions

a) Contracts with Two Wage Decisions

If the contract includes two wage decisions, the contractor, and each subcontractor who works on the site, must submit either two separate payrolls (one for each wage decision) or one payroll which identifies each worker twice and the hours worked under each wage decision. One single payroll, reflecting each worker once, may be submitted provided the Contractor uses the higher rate in the wage decisions for each identical job classification. However, where a job classification is not listed in a wage decision and is needed for that portion of the work, the classification **must** be added to the wage decision. A worker may not be paid at the rate for a classification using the hourly rate for that same classification in another wage decision. After the additional classification is approved, the contractor may pay the higher of the two rates and submit one payroll, if desired.

b) Complying with Minimum Hourly Amounts

1) The minimum hourly amount due to a worker in each classification is the total of the amounts in the Rates and Fringe Benefits (if any) columns of the applicable wage decision.

2) The contractor may satisfy this minimum hourly amount by any combination of cash and bona fide fringe benefits, regardless of the individual amounts reflected in the Rates and Fringe Benefits columns.

3) A contractor payment for a worker which is required by law is not a fringe benefit in meeting the minimum hourly amount due under the applicable wage decision. For example, contractor payments for FICA or unemployment insurance are not a fringe benefit; however, contractor payments for health insurance or retirement are a fringe benefit. Generally, a fringe benefit is bona fide if (a) it is available to most workers and (b) involves payments to a third party.

4) The hourly value of the fringe benefit is calculated by dividing the contractor's annual cost (excluding any amount contributed by the worker) for the fringe benefit by 2080. Therefore, for workers with overtime, an additional payment may be required to meet the minimum hourly wages since generally fringe benefits have no value for any time worked over 40 hours weekly. (If a worker is paid more than the minimum rates required by the wage decision, this should not be a problem. As long as the total wages received by a worker for straight time equals the hours worked times the minimum hourly rate in the wage decision, the requirement of the Davis-Bacon and Related Acts has been satisfied.)

c) Overtime

For any project work over 40 hours weekly, a worker generally must be paid 150% of the actual hourly cash rate received, not the minimum required by the wage decision. (The Davis-Bacon and Related Acts only establishes minimum rates and does not address overtime. The Contract Work Hours Act contains the overtime requirement and uses basic rate of pay as the base for calculation, not the minimum rates established by the Davis-Bacon and Related Acts.)

d) Deductions

Workers who have deductions, not required by law, from their pay must authorize these deductions in writing. The authorization must identify the purpose of each deduction and the amount, which may be a specific dollar amount or a percentage. A copy of the authorization must be submitted with the first payroll containing the deduction. If deducted amounts increase, another authorization must be submitted. If deducted amounts decrease, no revision to the original authorization is needed. Court-ordered deductions, such as child support, may be identified by the responsible payroll person in a separate document. This document should identify the worker, the amount deducted and the purpose. A copy of the court order should be submitted.

e) Classifications Not Included in the Wage Decision

If a classification not in the wage decision is required, please advise the owner's representative in writing and identify the job classification(s) required. In some instances, the state agency may allow the use of a similar classification in the wage decision.

Otherwise, the contractor and affected workers must agree on a minimum rate, which cannot be lower than the lowest rate for any trade in the wage decision. Laborers (including any subcategory of the laborer classification) and truck drivers are not considered a trade for this purpose. If the classification involves a power equipment operator, the minimum cannot be lower than the lowest rate for any power equipment operator in the wage decision. The owner will provide forms to document agreement on the minimum rate by the affected workers and contractor.

The U.S. Department of Labor (USDOL) must approve the proposed classification and rate. The contractor may pay the proposed rate until the USDOL makes a determination. Should the USDOL require a higher rate, the contractor must make wage restitution to the affected worker(s) for all hours worked under the proposed rate.

f) Supervisory Personnel

Foremen and other supervisory personnel who spend at least 80% of their time supervising workers are not covered by the Davis-Bacon and Related Acts. Therefore, a wage decision will not include such supervisory classifications and their wages are not subject to any minimums under the Davis-Bacon and Related Act or overtime payments under the Contract Work Hours and Safety Standards Act. However, foremen and other supervisory personnel who spend less than 80% of their time engaged in supervisory activities are considered workers/mechanics for the time spent engaged in manual labor and must be paid at least the minimum in the wage decision for the appropriate classification(s) based on the work performed.

g) Sole Proprietorships / Independent Contractors / Leased Workers

The nature of the relationship between a prime contractor and a worker does not affect the requirement to comply with the labor standards provisions of this contract. The applicability of the labor standards provisions is based on the nature of the work performed.

If the work performed is primarily manual in nature, the worker is subject to the labor standards provisions in this contract. For example, if John Smith is the owner of ABC Plumbing and performs all plumbing work himself, then Mr. Smith is subject to the labor standards provisions, including minimum wages and overtime. His status as owner is irrelevant for labor standards purposes.

If a worker meets the IRS standards for being an independent contractor, and is employed as such, this means that the worker must submit a separate payroll as a subcontractor rather than be included on some other payroll. The worker is still subject to the labor standards provisions in this contract, including minimum wages and overtime.

If a contractor or subcontractor leases its workers, they are subject to the labor standards provisions in this contract, including minimum wages and overtime. The leasing firm must submit payrolls and these payrolls must reflect information required to determine compliance with the labor standards provisions of this contract, including a classification for each worker based on the nature of the work performed, number of regular hours worked, and number of overtime hours worked.

h) Apprentices / Helpers

A worker may be classified as an apprentice **only if participating in a federal or state program**. Documentation of participation must be submitted. Generally, the apprentice program specifies that the apprentice will be compensated at a percentage of journeyman rate. For Davis-Bacon Act purposes, the hourly rate cannot be lower than the percentage of the hourly rate for the classification in the applicable wage decision.

If the worker does not participate in a federal or state apprentice program, then the worker must be classified according to duties performed. This procedure may require classification in the trade depending on tools used, or as a laborer if specialized tools of the trade are not used. The contractor may want to consult with the Wage and Hour Division of the U.S. Department of Labor located in most large cities regarding the appropriate classification.

Presently, no worker may be classified as a helper. As with apprentices not participating in a formal apprentice program, the worker must be classified according to duties performed and tools used.

APPENDIX D TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION SUPPLEMENTARY CONDITIONS

American Iron and Steel Requirement

The Contractor acknowledges to and for the benefit of the _____ ("Owner") and the State of Florida (the "State") that it understands that iron and steel products to be installed as a part of this contract must be in compliance with the requirements in H.R. 3547, "Consolidated Appropriations Act, 2014," (Appropriations Act). H.R. 3547 includes the following language in Division G, Title IV, Sec. 436, under the heading, "Use of American Iron and Steel,":

(a) (1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j-12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term "iron and steel products" means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the "Administrator") finds that--

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

For waivers to these requirements based on (2)(b) above, contact Sheryl Parsons at USEPA Region IV. She can be reached by phone at (404) 562-9337.

General Decision Number: FL180230 01/05/2018 FL230

Superseded General Decision Number: FL20170230

State: Florida

Construction Type: Highway

County: Sarasota County in Florida.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018

* SUFL2013-048 08/19/2013

	Rates	Fringes
CARPENTER, Includes Form Work....	\$ 8.00	0.00
CEMENT MASON/CONCRETE FINISHER...	\$ 13.37	0.00
ELECTRICIAN.....	\$ 21.80	0.00
HIGHWAY/PARKING LOT STRIPING:		
Operator (Striping Machine).....	\$ 16.79	0.00
HIGHWAY/PARKING LOT STRIPING:		
Painter.....	\$ 12.13	0.00
INSTALLER - GUARDRAIL.....	\$ 11.94	0.28
IRONWORKER, ORNAMENTAL.....	\$ 13.48	0.00
IRONWORKER, REINFORCING.....	\$ 16.39	0.00
IRONWORKER, STRUCTURAL.....	\$ 16.42	0.00
LABORER (Traffic Control		
Specialist).....	\$ 12.77	2.23
LABORER: Asphalt, Includes		
Raker, Shoveler, Spreader and		

Distributor.....	\$ 13.89	0.00
LABORER: Common or General.....	\$ 11.03	0.29
LABORER: Concrete Saw (Hand Held/Walk Behind).....	\$ 11.71	0.00
LABORER: Flagger.....	\$ 11.77	0.00
LABORER: Grade Checker.....	\$ 14.56	0.00
LABORER: Mason Tender - Cement/Concrete.....	\$ 12.93	0.00
LABORER: Pipelayer.....	\$ 13.32	0.29
OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 15.89	0.36
OPERATOR: Bobcat/Skid Steer/Skid Loader.....	\$ 12.88	0.00
OPERATOR: Broom/Sweeper.....	\$ 13.69	0.00
OPERATOR: Bulldozer.....	\$ 16.79	0.00
OPERATOR: Concrete Finishing Machine.....	\$ 15.44	0.00
OPERATOR: Crane.....	\$ 21.69	0.00
OPERATOR: Curb Machine.....	\$ 19.67	0.00
OPERATOR: Drill.....	\$ 14.78	0.00
OPERATOR: Forklift.....	\$ 12.58	0.00
OPERATOR: Gradall.....	\$ 14.71	0.00
OPERATOR: Grader/Blade.....	\$ 18.28	0.00
OPERATOR: Loader.....	\$ 14.95	0.00
OPERATOR: Mechanic.....	\$ 19.49	0.00
OPERATOR: Milling Machine.....	\$ 16.09	0.00
OPERATOR: Oiler.....	\$ 17.31	0.00
OPERATOR: Paver (Asphalt, Aggregate, and Concrete).....	\$ 18.01	0.00
OPERATOR: Piledriver.....	\$ 17.23	0.00
OPERATOR: Post Driver (Guardrail/Fences).....	\$ 19.35	0.00
OPERATOR: Roller.....	\$ 14.59	0.00
OPERATOR: Scraper.....	\$ 11.74	0.00
OPERATOR: Screed.....	\$ 17.05	0.00
OPERATOR: Tractor.....	\$ 13.77	0.00

OPERATOR: Trencher.....	\$ 16.07	0.66
PAINTER: Spray.....	\$ 16.38	0.00
TRUCK DRIVER: Dump Truck.....	\$ 12.85	0.00
TRUCK DRIVER: Flatbed Truck.....	\$ 14.13	0.00
TRUCK DRIVER: Lowboy Truck.....	\$ 18.29	0.00
TRUCK DRIVER: Slurry Truck.....	\$ 11.96	0.00
TRUCK DRIVER: Water Truck.....	\$ 14.88	0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198

indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour

Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

General Decision Number: FL180176 01/05/2018 FL176

Superseded General Decision Number: FL20170176

State: Florida

Construction Type: Heavy

County: Sarasota County in Florida.

HEAVY CONSTRUCTION PROJECTS (Including Sewer and Water Lines)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2018

* ELEC0915-003 12/01/2017

	Rates	Fringes
ELECTRICIAN.....	\$ 28.18	38%+0.35

ENGI0925-010 06/01/2013		

	Rates	Fringes
POWER EQUIPMENT OPERATOR:		
Crawler Cranes; Truck		
Cranes; Pile Driver		
Cranes; Rough Terrain		
Cranes; and Any Crane not		
otherwise described below...	\$ 29.61	11.50
Drill.....	\$ 29.61	11.50
Hydraulic Cranes Rated 100		
Tons or Above but Less		
Than 250 Tons; and Lattice		
Boom Cranes Less Than 150		
Tons if not described below.	\$ 30.61	11.50
Lattice Boom Cranes Rated		
at 150 Tons or Above;		
Friction Cranes of Any		
Size; Mobile Tower Cranes		
or Luffing Boom Cranes of		
Any Size; Electric Tower		
Cranes; Hydraulic Cranes		

Rated at 250 Tons or
Above; and Any Crane
Equipped with 300 Foot or
More of Any Boom
Combination.....\$ 31.61 11.50
Oiler.....\$ 22.91 11.50

IRON0397-006 07/01/2017

	Rates	Fringes
IRONWORKER, STRUCTURAL.....	\$ 29.85	15.83

LAB00517-002 05/01/2017

	Rates	Fringes
LABORER: Grade Checker.....	\$ 19.20	7.85

PAIN0088-008 07/01/2017

	Rates	Fringes
PAINTER: Brush, Roller and Spray.....	\$ 20.21	10.18

SUFL2009-172 06/24/2009

	Rates	Fringes
CARPENTER.....	\$ 14.95	2.92
CEMENT MASON/CONCRETE FINISHER...	\$ 14.77	3.50
LABORER: Common or General.....	\$ 9.50	1.69
LABORER: Landscape.....	\$ 7.25	0.00
LABORER: Pipelayer.....	\$ 13.75	2.06
LABORER: Power Tool Operator (Hand Held Drills/Saws, Jackhammer and Power Saws Only).....	\$ 10.63	2.20
OPERATOR: Asphalt Paver.....	\$ 11.59	0.00
OPERATOR: Backhoe Loader Combo.....	\$ 16.10	2.44
OPERATOR: Backhoe/Excavator.....	\$ 15.00	0.52
OPERATOR: Bulldozer.....	\$ 17.00	0.00
OPERATOR: Grader/Blade.....	\$ 16.00	2.84
OPERATOR: Loader.....	\$ 14.75	0.00
OPERATOR: Mechanic.....	\$ 14.32	0.00
OPERATOR: Roller.....	\$ 10.76	0.00
OPERATOR: Scraper.....	\$ 11.00	1.74
OPERATOR: Trackhoe.....	\$ 20.92	5.50

OPERATOR: Tractor.....	\$ 10.54	0.00
TRUCK DRIVER, Includes Dump Truck.....	\$ 11.00	0.00
TRUCK DRIVER: Lowboy Truck.....	\$ 12.73	0.00
TRUCK DRIVER: Off the Road Truck.....	\$ 12.21	1.97

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing

the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial

contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

**CITY OF VENICE
EAST GATE TERRACE
PHASE 1
WATER MAIN REPLACEMENT PROJECT**

**BIDDING AND CONSTRUCTION
CONTRACT DOCUMENTS AND
TECHNICAL SPECIFICATIONS**

BID DOCUMENTS

Project No. 22120-001-01

Owner:

CITY OF VENICE
401 West Venice Avenue
Venice, Florida 34285

Engineer:

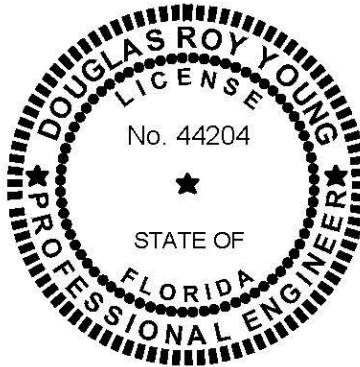
JONES EDMUNDS & ASSOCIATES, INC.
7230 Kyle Court
Sarasota, Florida 34240

Certificate of Authorization #1841

January 2018

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**CITY OF VENICE
EAST GATE TERRACE
PHASE I
WATER MAIN REPLACEMENT**



**THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED
BY DOUGLAS R. YOUNG ON THE DATE INDICATED.**

**PRINTED COPIES OF THIS DOCUMENT ARE NOT
CONSIDERED SIGNED AND SEALED AND THE SIGNATURE
MUST BE VERIFIED ON ANY ELECTRONIC COPIES.**

Douglas R. Young, PE
FL Professional Engineer No. 44204
Jones Edmunds & Associates, Inc.
Certificate of Authorization #1841
Divisions 1, 2, 9, and 15

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APPENDIX A GEOTECHNICAL ENGINEERING SERVICES REPORT, TIERRA,
NOVEMBER 13, 2017

DIVISION 1

GENERAL REQUIREMENTS

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SECTION 01000
PROJECT REQUIREMENTS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Work to be done consists of the furnishing of all labor, materials, and equipment and the performance of all Work included in this Contract. The summary of the Work is presented in Section 01100, Summary of Work.
- B. Work Included:
 - 1. The Contractor shall furnish all labor, superintendence, materials, plant power, light, heat, fuel, water, tools, appliances, equipment, supplies, and means of construction necessary for proper performance and completion of the Work. The Contractor shall obtain and pay for all necessary local building permits. The Contractor shall perform and complete the Work in the manner best calculated to promote rapid construction consistent with safety of life and property and to the satisfaction of the Engineer and in strict accordance with the Contract Documents. The Contractor shall clean up the Work and maintain it during and after construction, until accepted, and shall do all Work and pay all costs incidental thereto. He shall repair or restore all structures and property that may be damaged or disturbed during performance of the Work.
 - 2. The cost of incidental work described in these Project Requirements for which there are no specific Contract Items shall be considered as part of the general cost of doing the Work and shall be included in the prices for the various Contract Items. No additional payment will be made therefore.
 - 3. The Contractor shall provide and maintain such modern plant, tools, and equipment as may be necessary, in the opinion of the Engineer, to perform in a satisfactory and acceptable manner all the Work required by this Contract. Only equipment of established reputation and proven efficiency shall be used. The Contractor shall be solely responsible for the adequacy of his workmanship, materials, and equipment, prior approval of the Engineer notwithstanding.
- C. Public Utility Installations and Structures:
 - 1. Public utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, vaults, manholes, and all other appurtenances and facilities pertaining thereto whether owned or controlled by the Owner, other governmental bodies, or privately owned

by individuals, firms, or corporations used to serve the public with transportation, traffic control, gas, electricity, telephone, sewerage, drainage, water, or other public or private property which may be affected by the Work shall be deemed included hereunder.

- a. The Contract Documents contain data relative to existing public utility installations and structures above and below the ground surface. These data are not guaranteed as to their completeness or accuracy and it is the responsibility of the Contractor to make his own investigations to inform himself fully of the character, condition, and extent of all such installations and structures as may be encountered and as may affect the construction operations.
- b. The Contractor shall protect all public utility installations and structures from damage during the Work. Access across any buried public utility installation or structure shall be made to avoid any damage to these facilities. All required protective devices and construction shall be provided by the Contractor at his expense. All existing public utilities damaged by the Contractor shall be repaired by the Contractor, at his expense. No separate payment shall be made for such protection or repairs to public utility installations or structures.
- c. Public utility installations or structures owned or controlled by the Owner or other governmental body which are shown on the Drawings to be removed, relocated, replaced, or rebuilt by the Contractor shall be considered as a part of the general cost of doing the Work and shall be included in the prices bid for the various Contract Items. No separate payment shall be made therefor.
- d. Where public utility installations or structures owned or controlled by the Owner or other governmental body are encountered during the Work and are not indicated on the Drawings or in the Specifications, and when, in the opinion of the Engineer, removal, relocation, replacement, or rebuilding is necessary to complete the Work under this Contract, such Work shall be accomplished by the utility having jurisdiction, or such Work may be ordered, in writing by the Engineer, for the Contractor to accomplish. If such work is accomplished by the utility having jurisdiction it will be carried out expeditiously, and the Contractor shall give full cooperation to permit the utility to complete the removal, relocation, replacement, or rebuilding as required. If such work is accomplished by the Contractor, it will be paid for as extra work as provided in the Agreement.
- e. At all times in performance of the Work the Contractor shall employ acceptable methods and exercise reasonable care and skill so as to avoid unnecessary delay, injury, damage, or destruction of

public utility installations and structures and shall at all times in the performance of the Work avoid unnecessary interference with or interruption of public utility services and cooperate fully with the owners thereof to that end.

- f. The Contractor shall give written notice to the Owner and other governmental utility departments and other owners of public utilities of the location of his proposed construction operations at least 72 hours in advance of breaking ground in any area or on any unit of the Work.
- g. The maintenance, repair, removal, relocation, or rebuilding of public utility installations and structures, when accomplished by the Contractor as herein provided, shall be done by methods approved by the owners of such utilities.

1.02 RELATED WORK (NOT USED)

1.03 SUBMITTALS (NOT USED)

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 DRAWINGS AND PROJECT MANUAL

- A. Drawings: When obtaining data and information from the Drawings, figures shall be used in preference to scaled dimensions and large-scale drawings in preference to small-scale drawings.

B. Supplementary Drawings:

1. When, in the opinion of the Engineer, it becomes necessary to explain more fully the Work to be done or to illustrate the Work further or to show any changes which may be required, the Engineer will prepare drawings known as Supplementary Drawings, with specifications pertaining to such Drawings, and the Contractor will be furnished one complete set of reproducible black line prints (22 inches by 34 inches) and one reproducible copy of the specifications.
2. The Supplementary Drawings shall be binding upon the Contractor with the same force as the Contract Drawings. Where such Supplementary Drawings require either less or more than the estimated quantities of Work, credit to the Owner or compensation therefor to the Contractor shall be subject to the terms of the Agreement.

C. Contractor to Check Drawings and Data:

1. The Contractor shall verify all dimensions, quantities, and details shown on the Drawings, Supplementary Drawings, Schedules, Specifications, or other data received from the Engineer, and shall notify the Engineer of all errors, omissions, conflicts, and discrepancies found therein. Failure to discover or correct errors, conflicts, or discrepancies shall not relieve the Contractor of full responsibility for unsatisfactory work, faulty construction, or improper operation resulting therefrom, nor from rectifying such conditions at his own expense. He will not be allowed to take advantage of any errors or omissions, as full instructions will be furnished by the Engineer should such errors or omissions be discovered.
2. All schedules are given for the convenience of the Engineer and the Contractor and are not guaranteed to be complete. The Contractor shall assume all responsibility for making estimates of the size, kind, and quantity of materials and equipment included in the Work to be done under the Contract.

D. Specifications: The Technical Specifications each consist of three parts: General, Products, and Execution. The General part of a Specification contains General Requirements which govern the Work. The Products and Execution parts modify and supplement the General Requirements by detailed requirements for the Work and shall always govern whenever there appears to be a conflict.

E. Intent:

1. All Work called for in the Specifications applicable to this Contract, but not shown on the Drawings in their present form, or vice versa, shall be of like effect as if shown or mentioned in both. Work not specified in either

the Drawings or in the Specifications but involved in carrying out their intent or in the complete and proper execution of the Work is required and shall be performed by the Contractor as though it were specifically delineated or described.

2. The apparent silence of the Specifications as to any detail or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used. The interpretation of these Specifications shall be made upon that basis.

1.11 MATERIALS AND EQUIPMENT

A. Manufacturer:

1. All transactions with the manufacturers or subcontractors shall be through the Contractor, unless the Contractor shall request and at the Engineer's option that the manufacturer or subcontractor deal directly with the Engineer. Any such transactions shall not in any way release the Contractor from his full responsibility under this Contract.
2. Any two or more pieces of material or equipment of the same kind, type, or classification, and being used for identical types of service, shall be made by the same manufacturer.

B. Delivery:

1. The Contractor shall deliver materials in ample quantities to ensure the most speedy and uninterrupted progress of the Work so as to complete the Work within the allotted time.
2. The Contractor shall also coordinate deliveries in order to avoid delay in or impediment of the progress of the work of any related Contractor.
3. The Contractor shall make arrangements to physically receive ALL deliverables to project site.

1.12 INSPECTION AND TESTING

A. General:

1. For tests specified to be made by the Contractor, the testing personnel shall make the necessary inspections and tests, and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Contract Documents. Five copies of the reports shall be submitted and authoritative certification thereof must be furnished to the Engineer as a prerequisite for the acceptance of any material or equipment.

2. If, in the making of any test of any material or equipment, the Engineer ascertains that the material or equipment does not comply with the Contract Documents, the Contractor will be notified thereof and he will be directed to refrain from delivering said material or equipment, or to remove it promptly from the site or from the Work and replace it with acceptable material without cost to the Owner.

B. Costs:

1. The Contractor shall provide all inspection and testing of materials furnished under this Contract, unless otherwise expressly specified.
2. The Contractor shall bear the cost of shop and field tests of equipment and of certain other tests specifically called for in the Contract Documents, and such costs shall be deemed to be included in the Contract Price.
3. The Owner may test materials and equipment submitted by the Contractor as the equivalent to those specifically named in the Contract for compliance. The Contractor shall reimburse the Owner for the expenditures incurred in making such tests of materials and equipment which are rejected for non-compliance.

C. Certificate of Manufacture:

1. The Contractor shall furnish the Engineer with authoritative evidence in the form of a certificate of manufacture that the materials to be used in the Work have been manufactured and tested in conformity with the Contract Documents.
2. These certificates shall be notarized and shall include copies of the results of physical tests and chemical analyses, where necessary, that have been made directly on the product or on similar products of the manufacturer.

D. Demonstration Tests:

1. Before the Contractor's request for a Substantial Completion inspection, all equipment and piping installed under this Contract shall be subjected to demonstration tests as specified or required to prove compliance with the Contract Documents.
2. The Contractor shall furnish labor, fuel, energy, water, and all other materials, equipment, and instruments necessary for all demonstration tests at no additional cost to the Owner. The Contractor shall assist in the demonstration tests as applicable.

1.13 LINES AND GRADES

A. Grade:

1. All work under this Contract shall be constructed in accordance with the lines and grades shown on the Drawings or as given by the Engineer. The full responsibility for keeping alignment and grade shall rest upon the Contractor.
2. The Engineer will establish bench marks and provide coordination points. Reference marks for lines and grades as the Work progresses will be located by the Contractor to cause as little inconvenience to the prosecution of the Work as possible. The Contractor shall place excavation and other materials so as to cause no inconvenience in the use of the reference marks provided. He shall remove any obstructions he places contrary to this provision.

B. Surveys:

1. At his own expense the Contractor shall furnish and maintain stakes and other such materials.
2. The Contractor shall check such reference marks by such means as he may deem necessary and, before using them, shall call the Engineer's attention to any inaccuracies.
3. At his own expense the Contractor shall establish all working or construction lines and grades as required from the reference marks set by the Engineer and shall be solely responsible for the accuracy of these lines and grades. He shall, however, be subject to check and review by the Engineer.

C. Safeguarding Marks:

1. The Contractor shall safeguard all points, stakes, grade marks, monuments, and bench marks made or established on the Work, bear the cost of re-establishing them if disturbed, and bear the entire expense of rectifying work improperly installed due to not maintaining or protecting or to removing without authorization such established points, stakes, and marks.
2. The Contractor shall safeguard all existing and known property corners, monuments, and marks adjacent to but not related to the Work and shall bear the cost of re-establishing them if they are disturbed or destroyed.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01100 SUMMARY OF WORK

PART 1 GENERAL

1.01 SCOPE OF WORK

Unless otherwise expressly provided in the Contract Documents, the Work must be performed in accordance with best modern practice, with materials and workmanship of the highest quality to the satisfaction of the Owner.

- A. The Project title is **City of Venice East Gate Terrace Phase 1 Water Main Replacement Project**.
- B. The Work of this Project includes but is not limited to the construction of approximately 3,850 linear feet of 6-inch water main, 39 long services, 33 short services, service lines from the meter to house connection at each house, connections to existing water mains and appurtenances, and grouting and abandonment of existing water mains as shown on the Drawings.
- C. The Specification divisions and Drawings are an integrated part of the Contract Documents and, as such, will not stand alone if used independently as individual sections, divisions, or drawing sheets. The Drawings and Specifications establish minimum standards of quality for this project. They do not purport to cover all details entering into the design and construction of materials and equipment.

1.02 RELATED WORK (NOT USED)

1.03 SUBMITTALS (NOT USED)

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to herein shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

- A. American Association of State Highway and Transportation Officials (AASHTO) Formerly (AASHO)
- B. American Concrete Institute (ACI)
- C. American Institute of Steel Construction (AISC)
- D. American Iron and Steel Institute (AISI)

- E. American National Standards Institute (ANSI)
- F. American Standards Association (ASA)
- G. American Society of Mechanical Engineers (ASME)
- H. American Society of Testing and Material (ASTM)
- I. American Water Works Association (AWWA)
- J. Building Officials and Code Administrators International, Inc. (BOCA)
- K. Construction Specifications Institute (CSI)
- L. Federal Specification (FS)
- M. Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction, Latest English Edition (Standard Specifications)
- N. FDOT Roadway and Traffic Design Standards Latest English Edition (FDOT Index)
- O. Geosynthetics Institute (GSI)
- P. National Bureau of Standards (NBS)
- Q. National Fire Protection Association (NFPA)
- R. Portland Cement Association (PCA)
- S. Occupational Safety and Health Act (Public Law 91-596), U.S. Department of Labor (OSHA)
- T. Steel Structures Painting Council (SSPC)
- U. Southern Standard Building Code (SSBC)
- V. Underwriters' Laboratories, Inc. (UL)
- W. United States of America Standards Institute (USASI)
- X. Regulations of Florida Industrial Commission Regarding Safety
- Y. All local, state, county, or municipal building codes requirements of the Owner's Insurance

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 GENERAL REQUIREMENTS

- A. Unless otherwise specified on the Construction Drawings or Specifications, all work and the quality of materials shall conform to the referenced sections of the Florida Department of Transportation (FDOT) *Standard Specifications for Road and Bridge Construction, Supplementary Specifications, and Roadway and Traffic Design Standards*. The Contractor shall retain on the job site copies of these standard FDOT documents. The basis of payment shall conform to Section 01200, Measurement and Payment, of the General Requirements.

1.11 WORKING HOURS

- A. Work under this contract shall not be prosecuted on Saturdays, Sundays or on City holidays, except in time of emergency, and then only under written permission from the Owner who shall be the sole judge as to the urgency of that situation. On weekdays, the workday shall be limited to daylight hours between the hours of 7:00 AM to 4:00 PM.
- B. If the Contractor deems it necessary to work on Sundays, holidays, or beyond daylight hours to comply with his construction schedule or because of an emergency, the Contractor shall request permission of the Owner to do so 72 hours in advance. If, in the opinion of the Owner, the need is bona fide, the Owner will authorize the Contractor to work such hours as may be necessary.

1.12 REIMBURSEMENT FEES

- A. The following hourly rates shall be applied as the Owner's reimbursement of the Engineer's fee to be paid by the Contractor for expenses incurred due to Contractor's working beyond regular working hours, for evaluation of substitutions, for costs generated as a result of more than two submittals of any one Shop Drawing or Sample being required for evaluation due to rejection for noncompliance of the original submittal or for lack of information required by the Contract Documents, for any additional field observations, engineering analysis, correspondence, meetings, or other work due to non-complying or defective construction, materials, or equipment performed or furnished by the Contractor, Subcontractors, or Suppliers, for all costs due to work not being ready for tests and/or inspections when the Contractor has notified the Engineer that work is ready for tests and/or inspections, and for retests resulting from failed tests.

1.	Senior Field Representative (Construction):	\$105
2.	Senior Construction Administrator:	\$150
3.	Engineering Consultant (Senior Project Manager):	\$205
4.	Administrative Assistant:	\$ 65

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01200
MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section covers methods of measurement and payment for items of work under this Contract.
- B. The total Contract Price shall cover all work required by the Contract Documents. All cost in connection with the proper and successful completion of the work, including furnishing all materials, equipment, and tools and performing all necessary labor and supervision to fully complete the work, shall be included in the unit price and lump-sum Bid prices. All work not specifically set forth as a pay item in the Bid Form or Bid Schedule shall be considered a subsidiary/ancillary obligation of the Contractor and all costs in connection with these subsidiary/ancillary obligations shall be included in the Bid(s) to provide a complete and functional Project.

1.02 RELATED WORK (NOT USED)

1.03 SUBMITTALS (NOT USED)

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 EXCAVATION, TRENCHING, AND CLEARING

- A. Except where otherwise specified, the unit price or lump-sum price bid for each item of work which involves excavation, trenching, clearing, grubbing, or disposal of cleared and grubbed materials shall include all costs for such work. No direct payment shall be made for clearing, grubbing, disposal of cleared or grubbed materials, excavation, trenching, disposal of surplus excavated material, handling water (and groundwater) and purchasing and hauling of required fill material. All excavation and trenching shall be unclassified as to materials which may be encountered; in addition, trenches shall be unclassified as to depth, unless otherwise stated.

1.11 LUMP SUM

- A. For lump-sum items, payments shall be made to the Contractor in accordance with an accepted Progress Schedule of Values on the basis of actual work completed and accepted by the Owner at the final completion of the Project.

1.12 UNIT PRICE

- A. For unit price items, payment shall be made based on the actual amount of work accepted by the Owner and for the actual amount of materials in place at the final completion of the Project, as confirmed by the final measurements.
- B. After the work is completed and before final payment is made, the Engineer will make final measurements, with all required assistance from the Contractor, to determine the quantities of various items of work accepted as the basis for the final unit price payment.

1.13 PAYMENT FOR INCREASED OR DECREASED QUANTITIES

- A. When alterations in the quantities of unit price work not requiring a Change Order(s), as herein provided for, are ordered and performed, the Contractor shall accept payment in full at the Contract unit price multiplied by the actual quantities of work constructed and accepted by the Owner at the completion of the project.
- B. The actual percentage of each lump sum bid item completed by the Contractor and accepted by the Owner at the final completion of the Project will be paid to the Contractor.

1.14 DELETED ITEMS

- A. Should any items contained in the Bid Schedule(s) be found unnecessary for the proper completion of the work contracted, the Engineer may eliminate such items from the Contract. This action shall in no way invalidate the Contract and no financial allowance or compensating payment for anticipated profit, overhead, etc., will be made for items so eliminated in making final payment to the Contractor.

1.15 PARTIAL PAYMENTS

- A. Partial payments shall be made monthly as the work progresses. Partial payment shall be made subject to the provisions of the General and Supplementary Conditions.

1.16 PAYMENT FOR STORED MATERIAL DELIVERED TO THE PROJECT

- A. When requested by the Contractor and at the discretion of the Owner, payment may be made for all or part of the value of acceptable materials and equipment to be incorporated into bid items, which have not been used, and which have been delivered to the construction site or placed in storage places acceptable to the Owner. The Contractor shall provide receipts for all stored material items requested for reimbursement which clearly identify the stored material item, where it is to be constructed, the unit cost of the item, as well as the total cost of the delivered item(s), the quantity of the item, the brand name of the item, and the supplier. Note that there are additional documentation requirements and storage requirements within the Contract Documents that must also be met before the Contractor can be reimbursed for these stored materials.
- B. No payment shall be made for fuels, supplies, installation or connection hardware, lumber, false work, or other similar materials or on temporary structures or other work (items) of any kind which are not a permanent part of the Contract. Items having a value of less than \$2,500 shall not be compensated for as a stored material item.

1.17 FINAL PAYMENT

- A. If requested by the Engineer, the Contractor shall field verify all quantities in dispute by using visual observation, taped measurements, or other methods designated by the Engineer. The field verification shall be made in the presence of the Engineer and agreed to by both the Engineer and the Contractor. The Engineer will prepare a final adjusting Change Order which will adjust the final quantities of the project Bid Schedule to reflect the actual work accepted by the Owner and for which the Contractor will be compensated.

1.18 SCHEDULE OF VALUES

- A. A schedule of values for the lump-sum bid items and some of the unit price bid items as required by the Engineer shall be submitted and accepted before the first pay request is approved by the Engineer. The schedule of values shall be based on the prices bid in the Bid Schedule(s). Prices bid in the Bid Schedule(s) cannot be changed in the schedule of values; they can only be broken down into more detail so that the Engineer can more accurately review and approve the Contractor's pay application for the completed work.

1.19 MISCELLANEOUS CONSTRUCTION ITEMS

- A. When pipe/service lines are constructed across a road, the road shall not be cut to perform this construction unless authorized in writing by the Engineer. Service lines are to be bored, jack and bored, or horizontally directionally drilled (HDD) under the road. Jetting of water lines or water service lines will not be allowed.
- B. The Contractor shall take all precautions necessary to protect existing utilities, roads, and miscellaneous items from damage during construction.
- C. The Contractor shall repair, relocate, or replace existing utilities, roadways, and miscellaneous items to pre-construction conditions.
- D. All repairs, relocations, and replacements necessary are considered incidental to the work and will be at the Contractor's cost, with no cost to the Owner.
- E. The unit-price bid items and lump-sum bid items for all pipe items shall constitute full compensation for furnishing, laying, jointing, and testing of pipe; dewatering; excavation and backfill; restoration and cleanup. All water lines, which are to be paid for per linear foot in the Bid Schedule, will be measured for payment only on a horizontal plane after installation, unless otherwise noted.
- F. Payment for the water services, fire hydrants, and isolation valve bid items shall not be made until the associated Water Service Cards, Fire Hydrant Cards, and Isolation Valve Cards have been properly filled out, signed by the Contractor, and accepted by the Engineer as completed installations. Samples of the Water Service Card, Fire Hydrant Card, and Isolation Valve Card are located at the end of Specification Section 01785, Record Documents. The Contractor shall make all required copies of the cards for use in the work.
- G. The Contractor shall have the Engineer observe and document the installation of each underground fitting on the project. If the installation of any fitting is not confirmed and documented by the Engineer, it shall not be paid for by the Owner.

PART 2 PAY ITEM DESCRIPTIONS

2.01 BID ITEMS

The descriptions provided in the following Paragraphs are to be used by the Bidder in preparing the Bid Schedule(s). They generally indicate how the major workscope items and their respective costs are to be separated into the line items listed in the Bid Schedule(s). These descriptions are not fully representative nor all inclusive of the work required to complete the project in accordance with the Contract Documents. It is the Bidder's responsibility to include all required costs within the most appropriate line item(s).

Item 1. Mobilization/Demobilization (not to exceed 5% of Total Base Bid)—This lump-sum item shall include and cover the costs for performing construction, preparatory, and overhead operations, including but not limited to movement of personnel and equipment to and from the site, sanitary facilities, project administration and management, insurance, bonds, Owner and Engineer indemnification, temporary utilities, project signs, permits related to construction, redline updates to project as-built drawings, and all other similar activities and facilities necessary for executing this project. This item shall not exceed 5% of the Total Base Bid. The Contractor will be paid 40% of this item upon completion of mobilization and 3% per month for general conditions, with the remainder paid upon demobilization.

Item 2. Environmental Protection (not to exceed 2% of the Total Base Bid)—This lump-sum item shall include but not be limited to all costs for providing a comprehensive environmental protection program for the project site and other areas that may be affected by the construction. This includes providing labor and materials necessary to prevent environmental damage to the ground, water, and air in conformance with all local, state, and federal laws. Examples include control of stormwater, erodible soils, noise, dust, pollutants, trash, waste, pumping discharge, and any other substance or activity that may adversely impact the environment. The Contractor will be paid 40% upon delivery and setup of the material, and the remainder will be prorated equally over the construction period. This item shall not exceed 2% of the Total Base Bid.

Item 3. Maintenance of Traffic—This lump-sum item shall include but not be limited to all costs for providing all labor, signage, barricades, and other equipment necessary to provide traffic control in accordance with Florida Department of Transportation (FDOT) Standard Index 600 Series for all phases of work and prepare and implement Maintenance of Traffic (MOT) plans in accordance with FDOT and City of Venice requirements and all other MOT plans as may be required by local, county, or state agencies. The MOT plan shall be submitted to the City of Venice and the Engineer for review and approval. The Contractor shall be paid 50% upon initial delivery and set-up of the materials, and the remaining 50% shall be prorated equally over the construction duration.

Item 4. Grout and Abandon Existing Water Main—Measurement shall be based on the linear feet of pipe, the size and material indicated, and grouted as measured in plan view along the

centerline of the pipe. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to grout all pipe as indicated on the Drawings and shall include full compensation for all set up, grout, pumping, caps, closing or opening valves, and disposal of pipe removed to allow capping and grouting as indicated on the Drawings, removing valve boxes, and restoring to pre-construction condition or better of affected areas.

Item 5. Water Main—Measurement shall be based on the laying length of pipe of the size indicated in linear feet actually placed and accepted as measured in plan view along the centerline of the completed pipe within the project area indicated. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install pipe as shown on the Drawings and shall include full compensation for all site work, excavation, jointing, joint restraint, pipe supports, tracing wire, detectable tape, backfill, pressure testing, bacteriological sampling, removal and replacement of obstacles including but not limited to street signs and mailboxes required for installation, restoration of all sod and other landscaping, restoration of any sidewalks, driveways, curbing, or other items damaged by the Contractor, and all other restoration not covered by another Bid Item as may be necessary to return the work area to at least equal or better condition, complete and ready for service.

Item 6. Water Service – Main to Meter—Measurement shall be the quantity of each type of water service constructed and accepted by the Engineer. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install each service by type and shall include full compensation for all tapping of water mains, tapping saddles, corporation stops, polyethylene tubing of the size indicated on the Drawings, tracing wire, PVC casings, curb stops, road crossings, meter boxes, pressure testing, all restoration necessary within the right-of-way not covered under another payment line item, and bacteriological sampling required for installation, complete and ready for service.

Item 7. House Service Line – Meter to House—Measurement shall be based on the laying length of pipe indicated in linear feet actually placed and accepted as measured in plan view along the centerline of the completed pipe within the project area indicated. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install water service lines from the meter to the house service connection or other connection as indicated on the Drawings including but not limited to pipe, fittings, and removal of existing meters and meter boxes. This item does not include restoration on private property. Restoration on private property is included in Item 14, Private Property Restoration. If a homeowner requires a new backflow preventer, the homeowner will be responsible for the cost of this item and may elect to hire a plumber to provide this item or contract with the Contractor's plumber.

Item 7a. Contractor/Property Owner Coordination—The Contractor shall provide the following coordination services:

1. Contacting the property owner to schedule an installation date.
2. Meeting with the property owner before installation to go over the designed service route. The Owner's representative shall be present at the meeting.

3. Discussing with the property owner any changes to the property since the issuance of Bid Documents, obstructions in the designed service route not shown on the Drawings, and other items relevant to the installation.
4. Meeting with the property owner after construction to ensure that there are no pending issues or concerns.

Payment shall be made for the number of property owners that the Contractor has provided with coordination services. The Contractor shall maintain a log book that records the coordination hours. The log book shall include the date, address, time/duration, and description of coordination efforts for each event. The Contractor shall be compensated for 30 minutes of coordination per each affected property.

Item 8. Relocated Reduced Pressure Principal Assemblies—The Contractor shall provide all labor, equipment, and materials to remove existing reduced pressure (RP) principal assemblies on water services to be relocated. Relocated RP assemblies shall meet all applicable codes. RP assemblies are required for all non-residential (i.e., commercial/industrial) customers and residential customers that use surface water or potable water for irrigation. The RP assembly installation shall include but may not be limited to:

1. Removing the RP assembly from the existing service.
2. Miscellaneous fittings, piping, and accessories necessary for a complete installation.
3. Testing.
4. Repairs if testing fails or there are leaks present after installation.

Note: Every RP is required to have some type of thermal expansion relief, either a Thermal Expansion Tank or a Relief Valve. If a residential or commercial service has an existing RP above grade and in conformance with current plumbing codes, it must be relocated by the Contractor's licensed plumber. If the existing RP does not conform to current plumbing codes, the relocated RP must be brought up to code by the Contractor's plumber. If an RP does not exist and is required, the homeowner is responsible for having an RP installed in conformance with current plumbing codes. The homeowner may hire a plumber or contract with the Contractor's plumber for this work. The Contractor shall coordinate timing of the installation of the RP and thermal expansion relief with the homeowner.

Item 9. Relocate Dual Check Valve Assemblies—The Contractor shall provide all labor, equipment, and materials to remove existing dual check valve (DuC) assemblies on water services to be relocated. Relocated DuC assemblies shall meet all applicable codes. DuC assemblies are required for residential customers that use well water or reclaimed water for irrigation. The DuC assembly installation shall include but may not be limited to:

1. Removing the backflow device (BFD) from the existing service.

2. Miscellaneous fittings, piping, and accessories necessary for a complete installation.
3. Repairs if there are leaks present after installation.

Note: Residential customers that do not have a well or irrigation system are not required to have a BFD installed and will have any existing BFD removed. If a residential service has an existing DuC above grade, the device is to be relocated below grade by the Contractor's licensed plumber. The existing thermal expansion must be relocated to the water service connection at the house by the Contractor's plumber. If thermal expansion did not exist on an existing DuC, it must be provided on any relocated DuC and installed by the Contractor's plumber. The relief valve can be installed conveniently at the riser piping entering the home near the service valve or behind a hose bib. Pressure Reducing Valves are not required or desired. If a DuC does not exist, and is required, the homeowner is responsible for having a DuC installed in conformance with current plumbing codes. The homeowner may hire a plumber or contract with the Contractor's plumber for this work. The Contractor shall coordinate timing of the installation of the DuC and thermal expansion with the homeowner.

Item 10. Fittings (Ductile Iron)—Measurement for all fittings shall be the number of each size, material, and type of fitting installed and accepted by the Engineer. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install each fitting by size, material, and type and shall include full compensation for fittings, glands, gaskets, bolts, nuts, and restraint systems as specified complete and ready for service.

Item 11. Valves—Measurement for all valves shall be the number of each size and type of valve installed and accepted by the Engineer. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install each valve by size and type and shall include full compensation for valves, bolts, nuts, restraint systems, valve pads, identification disks, tracer wire, and tracer wire ports as specified complete and ready for service.

Item 12. 6-inch Tapping Valves—Measurement for 6-inch Tapping Valves shall be the number of each 6-inch tapping valve installed and accepted by the Engineer. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install each 6-inch tapping valve and shall include full compensation for valves, bolts, nuts, restraint systems, valve pads, identification disks, tracer wire, and tracer wire ports as specified complete and ready for service. Payment for tapping valves shall include all incidentals, including tapping sleeves, pressure testing, and tapping the water main.

Item 13. Fire Hydrant Assembly—Measurement for fire hydrants shall be the number of each fire hydrant installed and accepted by the Engineer. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install each fire hydrant and shall include full compensation for fire hydrants, isolation gate valves, valve pads, identification disks, tracer wire port, pipe from valve to fire hydrant, tracer wire, bolts, nuts, and restraint systems as specified complete and ready for service.

Item 14. Auto Flusher—Measurement for auto flushers shall be the number of each auto flusher installed and accepted by the Engineer. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install each auto flusher and shall include full compensation for auto flushers, restrained tapped main end caps, corporation stops, valve boxes, polyethylene tubing, fittings, curb stops, meters, and meter boxes as specified complete and ready for service.

Item 15. Asphalt Pavement Restoration—The Contractor shall provide all labor, equipment, and certain materials to restore asphalt pavement that has been damaged or removed due to the installation of the water main (Bid Item 5b). Work for this bid item shall include but may not be limited to:

1. Excavation.
2. Placing, grading, and compacting sub-base and/or base.
3. Furnishing and placing or replacing the damaged or removed pavement.
4. Milling, grading, levelling, compacting, and/or smoothing to provide a uniform longitudinal profile and cross-section with the existing pavement.
5. Disposal of all surplus existing materials.

Payment shall be made for the number of square feet of asphalt pavement installed and accepted by the Owner and/or Engineer. Pavement restoration shall be in as good or better condition as before construction.

Item 16. Private Property Restoration

Item 16a. Sod—The Contractor shall provide all labor, equipment, and certain materials to restore sod that has been damaged due to the installation of the water service pipe (Bid Item 7). Work for this bid item shall include but may not be limited to:

1. Earth bed preparation.
2. Providing, placing, compacting, and finishing topsoil.
3. Furnishing and placing sod.
4. Furnishing and placing stakes.
5. Rolling and tamping sod.
6. Mowing sod.
7. Replacing defective or deteriorated sod.
8. Maintaining and caring of sod in place.

Payment shall be made for the number of square feet of sod installed and accepted by the Owner and/or Engineer. Private property restoration shall be in as good or better condition as before construction. Unless approved by the Owner and/or Engineer, limits of sod restoration shall be 18 inches wide over the water service pipe route.

Item 16b. Brick Pavers—The Contractor shall provide all labor, equipment, and certain materials to restore brick pavers that have been damaged due to the installation of the water service pipe (Bid Item 7). Work for this bid item shall include but may not be limited to:

1. Excavation.
2. Placing, grading, and compacting sub-base and/or base.
3. Furnishing and placing or replacing the damaged brick pavers.
4. Grading, levelling, compacting, and/or smoothing to provide a uniform longitudinal profile and cross-section with the existing brick pavers.
5. Disposal of all surplus existing materials.

Payment shall be made for the number of square feet of brick pavers installed and accepted by the Owner and/or Engineer. Private property restoration shall be in as good or better condition as before construction. Unless approved by the Owner and/or Engineer, limits of brick paver restoration shall be 36 inches wide over the water service pipe route.

Item 16c. Asphalt/Concrete Driveway—The Contractor shall provide all labor, equipment, and certain materials to restore asphalt/concrete driveways that have been damaged due to the installation of the water service pipe (Bid Item 7). Work for this bid item shall include but may not be limited to:

1. Excavation.
2. Placing, grading, and compacting sub-base and/or base.
3. Furnishing and placing or replacing the damaged driveway.
4. Milling, grading, levelling, compacting and/or smoothing to provide a uniform longitudinal profile and cross-section with the existing driveway.
5. Disposal of all surplus existing materials.

Payment shall be made for the number of square feet of asphalt/concrete driveways installed and accepted by the Owner and/or Engineer. Private property restoration shall be in as good or better condition as before construction. Unless approved by the Owner and/or Engineer, limits of asphalt/concrete driveway restoration shall be 24 inches wide over the water service pipe route.

Item 16d. Asphalt/Concrete Walkway—The Contractor shall provide all labor, equipment, and certain materials to restore asphalt/concrete walkways that have been damaged due to the installation of the water service pipe (Bid Item 7). Work for this bid item shall include but may not be limited to:

1. Excavation.
2. Placing, grading, and compacting sub-base and/or base.
3. Furnishing and placing or replacing the damaged walkway.
4. Milling, grading, levelling, compacting, and/or smoothing to provide a uniform longitudinal profile and cross-section with the existing walkway.
5. Disposal of all surplus existing materials.

Payment shall be made for the number of square feet of asphalt/concrete walkways installed and accepted by the Owner and/or Engineer. Private property restoration shall be in as good or better condition as before construction. Unless approved by the Owner and/or Engineer, limits of asphalt/concrete walkway restoration shall be 24 inches wide over the water service pipe route.

Item 16e. Loose Stone/Gravel—The Contractor shall provide all labor, equipment, and certain materials to restore loose stone/gravel that has been displaced due to the installation of the water service pipe (Bid Item 7). Work for this bid item shall include but may not be limited to:

1. Removing loose stone/gravel.
2. Furnishing and placing or replacing the loose stone/gravel.
3. Grading and levelling to provide a uniform longitudinal profile and cross-section with the existing loose stone/gravel.
4. Disposal of all surplus existing materials.

Payment shall be made for the number of square feet of loose stone/gravel placed and accepted by the Owner and/or Engineer. Private property restoration shall be in as good or better condition as before construction. Unless approved by the Owner and/or Engineer, limits of loose stone/gravel replacement shall be 18 inches wide over the water service pipe route.

Item 16f. Landscaping—The Contractor shall provide all labor, equipment, and certain materials to replace landscaping that has been damaged due to the installation of the water service pipe (Bid Item 7). Work for this bid item shall include but may not be limited to:

1. Preparing earth bed.
2. Providing and placing landscaping.
3. Maintaining and caring of landscaping in place.

Payment shall be made for the number of square feet of landscaping placed and accepted by the Owner and/or Engineer. Private property restoration shall be in as good or better condition as before construction. Unless approved by the Owner and/or Engineer, limits of landscaping restoration shall be 18 inches wide over the water service pipe route.

Item 16g. Unavoidable Obstructions—The Contractor shall provide all labor, equipment, and certain materials to work around unavoidable obstructions encountered during the installation of the water service pipe (Bid Item 7). Examples of these unavoidable obstructions include walls and above-ground wood decks and patios.

Payment shall be made for the number of unavoidable obstructions encountered during the installation of the water service pipe. Private property restoration shall be in as good or better condition as before construction.

Item 17. Record Drawings—Payment of the lump-sum bid item in the Bid Form shall be full compensation for furnishing all labor, materials, equipment, transportation, tools, surveying, and incidentals required to complete and provide Record Drawings in accordance with the Contract Documents (Sections 01330, Submittals and Acceptance, and 01785, Record Documents) including updating electronic versions of the Drawings in AutoCAD, identifying items that were revised during the project or addenda, having all Drawings signed and sealed by a Florida-registered professional land surveyor, and providing signed-and-sealed copies of the Record Drawings. Once the Record Drawings have been submitted to the Engineer in AutoCAD format, reviewed, and determined by the Engineer to be complete according to the Specifications requirements, the entire lump-sum price will be paid to the Contractor.

Item 18. Owner's Allowance—The Owner's Allowance shall be as indicated. Payment shall be made to the Contractor, at the sole discretion of the Owner, for additional Work requested by the Owner that is not covered by the Scope of Work identified in this Contract. The Owner's Allowance will be used only with the prior written approval of the Owner. A Scope Description and Fee Breakdown shall be provided to the Owner for any proposed use of the Owner's Allowance.

Item 19. Permit Fee Allowance—Payment will be made to the Contractor based on actual invoiced amounts paid by the Contractor to obtain required Building Permits and inspections. Payment will not be made for:

1. Contractor premiums or markups.
2. Fees incurred due to the Contractor's negligence.
3. Permits required for the Contractor's convenience, but not required by the Contract Documents or the Engineer.
4. Fees and costs associated with utility services to temporary construction trailers required by the Contractor during construction.

END OF SECTION

SECTION 01290
SCHEDULE OF VALUES

PART 1 GENERAL

1.01 SCOPE OF WORK (NOT USED)

1.02 RELATED WORK

- A. General Conditions.

1.03 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance:

- A. To the Engineer, a proposed Schedule of Values allocated to the various portions of the Work, in accordance with Section 01000, Project Requirements, and Section 01200, Measurement and Payment.
- B. Upon request of the Engineer, supporting data that will substantiate the values' correctness.
- C. The accepted Schedule of Values shall be used only as the basis for the Contractor's Applications for Payment.
- D. An update and resubmittal of the Schedule of Values when Change Orders affect the listing or when the actual performance of the Work involves necessary changes of substance to values previously listed and approved.
- E. Schedule of Values:
 - 1. Submit typed schedule on EJCDC 1910-8-E forms provided by the Engineer. The Contractor's standard form or electronic media printout will be considered.
 - 2. Submit Schedule of Values in duplicate within 10 days after the date of Owner-Contractor Agreement.
 - 3. Format – Use the schedule of prices in the Bid Proposal. Show the cost breakdown for each lump-sum item. The lump-sum breakdown shall, at a minimum, use the Table of Contents of this manual outline. Identify each line item with the number and title of the major Specification Section. Identify site mobilization and demobilization, bonds and insurance,

Record Drawings, photographs, and operations and maintenance manuals, etc.

4. For unit cost allowances, identify quantities taken from the Contract Documents multiplied by the unit cost to achieve the total for the item.
5. Include within each line item a direct proportional amount of the Contractor's overhead and profit.
6. Revise the schedule to list approved Change Orders with each Application for Payment.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 CASH ALLOWANCES (NOT USED)

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01300
CONTRACT ADMINISTRATION

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section sets forth some of the general project requirements.

1.02 RELATED WORK

- A. Section 01330, Submittals and Acceptance.
- B. Section 01785, Record Documents.

1.03 SUBMITTALS

- A. Before commencing work, the Contractor shall submit a preliminary progress schedule to the Engineer for review and approval.
- B. The Contractor shall furnish the Engineer with revised progress schedules with each Application for Payment in addition to the number required by the Owner.
- C. The Contractor shall furnish the Engineer with required photographs to accompany each Application for Payment.
- D. The Contractor shall furnish the Engineer with three copies of the Application for Payment.
- E. The Contractor shall submit record documents at each progress meeting in accordance with Section 01785, Record Documents.
- F. At Contract closeout, the Contractor shall transmit Record Documents and samples with cover letter to the Engineer listing the following:
 - 1. Date.
 - 2. Project title and number.
 - 3. Contractor's name, address, and telephone number.
 - 4. Number and title of each Record Document.
 - 5. Signature of Contractor or authorized representative.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 FORMAT

- A. The Contractor shall prepare schedules as a time-scale logic diagram and bar chart unless otherwise approved by the Engineer. Each major and minor portion of work or operation shall be clearly identified and tied by logical sequence to the shop drawing schedule and schedule of values. All schedules shall be prepared and submitted on 11-inch-by-17-inch paper.

1.11 SCHEDULE CONTENT

- A. The Contractor shall show the complete sequence of construction by activity, with dates for beginning and completion of each element of construction and provide sub-schedules to define critical portions of the entire schedule. Schedules shall also show accumulated percentage of completion of each item and total percentage of work completed as of the first day of each month.

1.12 REVISIONS TO SCHEDULES

- A. The Contractor shall indicate the progress of each activity to the date of submittal and the projected completion date of each activity. Revised schedules shall identify activities modified since previous submittal, major changes in scope, and other identifiable changes. The Contractor shall also provide a narrative report to define problem areas, anticipated delays, and impact on schedule. The Contractor shall also report corrective action taken or proposed and its effect, including the effect of schedule changes on other contractors.

1.13 PROGRESS MEETINGS

- A. The Owner and Engineer will organize and conduct progress meeting at least once a month to discuss the progress of the Work. The Contractor and any subcontractors the Contractor deems necessary shall attend these meetings. At the Engineer's discretion, the frequency of the meetings may be increased if the progress of the Work is not satisfactory or if coordination problems should arise.

1.14 RECORD DOCUMENTS

- A. The Contractor shall adhere to the requirements specified in Section 01785, Record Documents.

1.15 REQUIRED PHOTOGRAPHS

- A. The Contractor shall adhere to the requirements specified in Section 01325, Construction Photographs.

END OF SECTION

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SECTION 01310
CONSTRUCTION COORDINATION

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall coordinate Work with that of other construction projects as needed.
- B. Before starting Work and from time to time as the Work progresses, the Contractor and each subcontractor shall examine the work and materials installed by others as it applies to its own work and shall notify the Engineer immediately in writing if any conditions exist which will prevent satisfactory results in the installation of the system. Should the Contractor or subcontractor start work without such notification, it shall be construed as an acceptance of all claims or questions as to the suitability of the work of others to receive its Work. The Contractor shall remove and/or replace, at its own expense, all work under this Contract which may have to be removed on account of such defects or omissions.

1.02 RELATED WORK

- A. Section 01000, Project Requirements.
- B. Section 01300, Contract Administration.
- C. Section 01770, Project Closeout.

1.03 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance:

- A. The Contractor shall ensure that all drawing, product data, and samples comply with Contract Documents and field dimensions and clearances.
- B. The Contractor shall submit requests for interpretation of Contract Documents in a timely fashion to ensure there are no disruptions with the Work as scheduled. Obtain instructions through the Engineer to resolve all queries.
- C. Process requests for substitutions and Change Orders through the Engineer.
- D. Deliver close-out submittals to the Engineer.

1.04 WORK SEQUENCE

- A. The Contractor shall submit a preliminary Progress Schedule to the Engineer. After review, the Contractor shall revise and resubmit the Progress Schedule to comply with requested revisions.

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 CONSTRUCTION MOBILIZATION

The Contractor shall do the following:

- A. Arrange for material and equipment storage and lay-down areas. The Contractor shall be responsible for obtaining permission from property owners. All costs associated with such areas shall be the Contractor's responsibility.
- B. Comply with the Engineer's procedures for intra-project communications: submittals, reports and records, schedules, coordination drawings, recommendations, and resolution of ambiguities/conflicts.
- C. Comply with the Engineer's instructions for use of temporary utilities and construction facilities.
- D. Coordinate field engineering and layout work under instructions of the Engineer.
- E. Coordinate scheduling, submittals, and work of the various sections of Contract Documents to ensure the efficient and orderly sequence of installation of construction elements, with provisions for accommodating items to be installed later.

- F. In addition to Progress Meetings specified in Section 01300, Contract Administration, hold pre-construction conferences with personnel and Subcontractors to ensure coordination of Work. The Engineer shall be informed of such meetings and shall be allowed to attend.
- G. Coordinate the use of project space. Use space efficiently to maximize accessibility for other installations, maintenance, and repairs.
- H. Coordinate Work at existing facilities to minimize disruption of the Owner's operations.
- I. Assemble and coordinate close-out submittals specified in Section 01770, Project Closeout.

1.11 COORDINATION DRAWINGS

- A. The Contractor shall provide information required by the Engineer for preparing coordination drawings.
- B. The Contractor shall review drawings before submitting them to the Engineer.

1.12 CLOSE-OUT PROCEDURES

The Contractor shall do the following:

- A. Notify the Owner when Work is considered ready for Substantial Completion.
- B. Comply with the Owner's instructions to correct items of Work listed in executed Certificates of Substantial Completion.
- C. Notify the Owner when Work has reached Final Completion.
- D. Comply with the Owner's instructions for completing items of Work found incomplete in the Engineer's final inspection.
- E. Comply with Section 01770, Project Closeout.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. All vehicles on the property must be operational.

3.02 UTILITIES

- A. The Contractor shall coordinate the activities of all utility companies with equipment in the construction area with the Contractor's and Subcontractor's Work.

3.03 CUTTING AND PATCHING

- A. No cutting and patching of new Work will be accepted. All Work must be new and continuous in its final form.

END OF SECTION

SECTION 01325
CONSTRUCTION PHOTOGRAPHS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall have digital photographs, and DVDs made of the Work from views and at such times as directed by the Engineer. These photographs and videos shall represent a visual history of the Project, from Contract Award through Contract Completion.
- B. The Contractor shall take a preconstruction video of the entire site, including the areas of adjacent properties within 100 feet of the limit of Work. Special effort shall be made to show the existing paved roads, shoulders, signs, water service routes on private property, and other existing features.
- C. The Contractor shall also use electronic “snap-shot” photography as necessary to record and facilitate resolution of on-site issues through the transmission of electronic photographs by e-mail from the site to the Engineer’s and Owner’s offices.

1.02 RELATED WORK

- A. Section 01000, Project Requirements.
- B. Section 01785, Record Documents.

1.03 SUBMITTALS (NOT USED)

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

PART 2 PRODUCTS

2.01 PRODUCTS

- A. Digital photographs shall be in color. Provide one copy of each digital picture on each of three CDs.
- B. Provide photographs taken of each of the major items during construction.
- C. View and Quantities Required: A minimum of 30 digital photographs per month clearly showing project status and key elements of construction.
- D. Deliver electronic images to the Engineer with every pay request.
- E. All digital photographs shall be clear, sharp, free of distortion, and shall have the date and time the photograph was taken imprinted on the photograph.

PART 3 EXECUTION

3.01 VIEWS REQUIRED

- A. Photographs shall be from locations to illustrate the condition of construction and the state of progress adequately.
- B. The Contractor shall provide before and after photographs of each portion of the site. At major locations, photographs shall include before, during, and after views to show the Work as it progresses.

3.02 DESCRIPTIVE INFORMATION

- A. Each CD shall be clearly labeled with the following:

COMPLETE PROJECT NAME

Contract No.

CONTRACTOR: (Name of Contractor)

- B. Each photograph shall have the following information. Information shall be on the photo or maintained in a photo log as required by the Owner.

DATE AND TIME: (When photo was taken)
PHOTO NO.: (Consecutive Numbers)
PHOTO BY: (Firm Name of Photographer)
LOCATION: (Description of Location and View)

- C. The Contractor shall provide the Engineer with a written description of each photograph. This description shall be submitted with the CDs. The Field Engineer or inspector shall approve the description.

3.03 VIDEOTAPE REQUIREMENTS

- A. Major Locations:

1. The Contractor shall provide color digital video of each major facility, and structures and facilities adjacent to the construction before construction starts and when construction has been completed.
2. All videos shall be recorded with character generator operating with date, time, and location on screen. During video recording, the Contractor shall narrate the video, explaining what is being shown, the problem that has occurred, and what is being done. All videos shall be delivered to the Engineer within 10 days after production.

END OF SECTION

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SECTION 01330
SUBMITTALS AND ACCEPTANCE

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall submit documentation that describes the Work to be performed under the Contract as required in this Section. This documentation will be for the Engineer and Owner's review and use. The documentation furnished by the Contractor must enable the Engineer and Owner to verify the Contractor's performance and compliance with Contract requirements. The documentation shall cover all services and deliverables required and secured by the Contract Documents.

1.02 RELATED WORK

- A. The Contractor shall prepare documentation and submittals required by other sections of the Contract. The format of documents and submittals required by other sections shall conform to the requirements of this Section.
 - 1. General Conditions.
 - 2. Supplementary Conditions.
 - 3. Section 01785, Record Documents.
 - 4. All Sections and Divisions that require submittal of documents.

1.03 SUBMITTALS

- A. General—The Contractor shall submit the following:
 - 1. Shop drawings: Drawings, schedules, diagrams, warranty, and other data prepared specifically for this Contract by the Contractor or through the Contractor by way of subcontractor, manufacturer, supplier, distributor, or other lower-tier contractor to illustrate a portion of the Work.
 - 2. Product data: Preprinted materials such as illustrations, standard schedules, performance charts, instructions, brochures, diagrams, manufacturer's descriptive literature, catalog data, and other data to illustrate a portion of the Work, but not prepared exclusively for this Contract.
 - 3. Samples: If required by the Specifications, physical examples of products, materials, equipment, assemblies, or workmanship that are physically identical to portions of the Work, illustrating portions of work, or establishing standards for evaluating appearance of finished work or both.

4. Administrative submittals: Data presented for reviews and acceptance to ensure that administrative requirements of the project are adequately met but not to ensure directly that work is in accordance with the design concept and in compliance with Contract Documents.

B. Coordination

1. Submittals and schedules shall be checked and coordinated with the Work of all trades involved before they are submitted and shall bear the Contractor's stamp of approval as evidence of such checking and coordination. Drawings or schedules submitted without this stamp of approval shall be returned to the Contractor for resubmission.

C. Start of Work

1. Within 10 calendar days after the notice to proceed for the project, the Contractor shall submit to the Engineer a Contract Data Requirements List that defines all data to be submitted under this Contract. Included in this list shall be the names of all proposed manufacturers furnishing specified items to the extent known. Review of this list by the Engineer shall in no way relieve the Contractor from providing materials, equipment, systems, and structures fully in accordance with the Specifications.

D. General Requirements

1. The Contractor shall prepare, assemble, and submit all documents as described herein. The Contractor shall submit certification that the documents prepared conform to the Contract requirements and will result in a complete and operable project. The Engineer shall review the Contractor's documents for conformance to the Contract requirements and may comment on the documents.
2. The Contractor shall approve and certify all project documents. The Contractor's failure to certify the documents or failure to provide documents that demonstrate conformance to the Contract requirements are grounds for rejection. The Contractor shall be responsible for and bear all costs for proceeding with any part of the Work that fails to meet the Contract requirements.
3. Submittal of documents for the Engineer's review shall in no way relieve the Contractor of full responsibility for providing a complete, safe, reliable, operating, and coordinated Work (system/equipment/facilities) that is in compliance with these Contract documents.

E. Requests for Substitution

1. All requests for substitution shall clearly and specifically indicate any and all differences or omissions between the products specified as basis of design and the product proposed for substitution. Data shall include but not be limited to differences as follows for both the specified and substituted products:
 - a. Principle of operation.
 - b. Materials of construction or finishes.
 - c. Thickness or gauge of materials.
 - d. Weight of item.
 - e. Deleted features or items.
 - f. Added features or items.
 - g. Changes in other work caused by the substitution.
 - h. If the substitution contains differences or omissions not specifically called to the attention of the Engineer, the Engineer reserves the right to require equal or similar features to be added to the substituted product at the Contractor's expense.

F. Submittal Requirements and Procedures

1. Drawing Formats and Requirements
 - a. Drawings—All Drawings and Shop Drawings shall be prepared on appropriately sized paper and shall have a blank area of 3 x 4 inches in the lower right hand corner above the title block. Each Drawing shall indicate the following information in the title block:
 - (1) Title and Drawing Number.
 - (2) Date of Drawing or Revision.
 - (3) Name of Building or Facility.
 - (4) Name of Contractor or subcontractor.
 - (5) Drawing contents and locations.
 - (6) Specification Section and Subsection Numbers.
 - b. Required Copies—Unless submitted electronically, all drawings submitted shall have a minimum of four copies distributed in the following way:
 - (1) 1—Owner.
 - (2) 2—Jones Edmunds.
 - (3) 1—Returned.

2. Product Data

- a. Requirements—Product data shall include all catalog cuts, performance surveys, test reports, equipment lists, material lists, diagrams, pictures, and descriptive material. All product data shall be submitted on either 8.5-x-11-inch or folded 11-x-17-inch size paper of 20-pound (9.072 kg) weight. The submittal information shall show the standard and optional product features, as well as all performance data and specifications. The manufacturer's recommendation for special tools shall be supplied.

3. Submittal Information Requirements

- a. When used in the Contract Documents, the term "Submittal Information" shall be considered to mean the following information at a minimum:
 - (1) Contract Name.
 - (2) Contract Number.
 - (3) Location within Facility.
 - (4) Date Submitted.
- b. Drawings—The Contractor shall mark submittal information on all Drawings in the left half of the 4-x-3-inch block as described above.
- c. Product Data and Manufacturer's Literature—The Contractor shall mark all product data and manufacturer's literature with submittal information and note which item is being furnished. The Contractor shall mark the option and supplies to be furnished with the item. At least one original manufacturer product data sheet must be submitted; the balance can be copied. Do not submit the manufacturer's general catalog; submit only items being installed or delivered. When manuals are being submitted, the Contractor shall mark submittal information on both the cover and title page. If manuals being submitted contain more than just one item, each item must be marked and only Contract name and number is to be marked on the cover and title page.

4. Training, Operation and Maintenance Manuals (NOT USED)

G. Required Submittals

1. Mechanical System Submittals

- a. This Section specifies general procedural requirements for mechanical schedules, performance data, control diagrams, and other submittal data.
- b. The Contractor shall submit the following:
 - (1) Performance Data.
 - (2) Finished Data—Complete surface preparation and finished data for all mechanical equipment shall be provided, including a complete list of cleaning instructions.
 - (3) Factory Testing—Detailed description of factory testing procedures, reporting procedures and criteria for test passing or failing shall be provided for all mechanical and electrical units/subsystems. Testing shall comply with the General Requirements and Technical Requirements Sections.
 - (4) Site (Field) Testing and Acceptance—Detailed description of site testing and acceptance tests including descriptions of procedures, testing equipment, reporting procedures, and criteria for passing or failing tests shall be provided for all mechanical and electrical units/subsystems. Testing shall comply with General Requirements and Technical Requirements.
 - (5) Factory Test Report—After fabrication and testing, the Contractor shall submit the results of tests. No shipment of any mechanical and electrical unit/subsystem shall be allowed without the written certification from the Contractor that the equipment conforms to the Contract requirements.
 - (6) Site Test and Acceptance Report—Site test and acceptance reports shall be submitted to the Owner and Engineer.

H. Submittal Review

- 1. The Engineer's review of the Contractor's documents shall not relieve the Contractor of the responsibility for meeting all of the requirements of the Contract nor of the responsibility for correcting the documents furnished. The Contractor shall have no claim for additional cost or extension in time because of delays due to revisions of the documents that may be necessary for ensuring compliance with the Contract.

2. The Engineer will review a submittal or re-submittal once, after which the cost of review shall be borne by the Contractor. The cost of engineering shall be equal to the Engineer's full cost.
3. No partial submittals will be reviewed. A submittal or re-submittal not complete will be returned to the Contractor for completing and re-submittal.
4. Documents submitted by the Contractor for approval by the Engineer will be returned bearing a project-specific stamp bearing the dated signature of the reviewer and one of four boxes checked:
 - a. NO EXCEPTIONS NOTED—This indicates that the submittal appears to be in compliance with the requirements of the performance specifications and that the Work may proceed.
 - b. MAKE CORRECTIONS NOTED—This indicates that the reviewer has added a minor correction to the submission and that the Work (modified in accordance with the correction comment) may proceed. The Contractor shall accept the responsibility of the modified document and resulting Work with no additional compensation.
 - c. AMEND AND RESUBMIT—This indicates that the submittal will require Contractor modifications based on the reviewer's comments that accompanied the returned submittal. The Contractor will be cautioned that work may not proceed under this review status.
 - d. REJECTED—This indicates that the submittal is not in conformance with the requirements of the performance Specifications and cannot be modified to gain compliance. A new submittal will be required in the instance of a "reject" status and the Contractor will be cautioned that work may not proceed under this condition.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SUBMITTAL PROCEDURES

- A. Before submitting documents for the Engineer's review, the Contractor shall review the documentation for conformance to the Contract requirements. Submittals shall be complete and comprise a logical division of the Contract Work.
- B. All documentation submitted by the Contractor to the Engineer shall be accompanied by a letter of transmittal and shall be submitted in a sequence that allows the Engineer to have all of the information necessary for checking and accepting a particular document at the time of submittal.
- C. Each document shall be identified by a document number, Contract number, Contract name, location, Specification Section, Subsection numbers, and submittal date. Where a manual/drawing is revised to reflect a change in design or a change for any other reason, each such revision shall be shown by a revision number, date, and subject in a revision block. Indication of official approval by the Contractor's Project Manager shall also be included. To permit rapid location of the revision, additional notation shall be made in the manual opposite the line or area where the change was made and identified by the corresponding revision number.

3.02 DOCUMENTATION CONTROL AND SUBMITTAL SEQUENCING

- A. The Contract Data Requirements List shall be updated and resubmitted to the Engineer at the monthly progress meeting, throughout the duration of the Contract. This list shall identify the Contractor's submittal number, proposed and actual submittal date, Contract Specification Section Number, Paragraph, Item of the Work, and type of document.
- B. The Contractor shall work with the Engineer to provide a regulated flow of submittals that allows the Engineer to review the submittals in the defined time frame without undue delays. Monthly the Contractor shall provide the Engineer a

schedule of the approximate quantities and delivery dates for all submittals due for the next 120 days.

3.03 FINAL RECORD DRAWINGS

- A. The Contractor shall submit the Final Record Drawing Package to the Engineer for review 60 days before Final Completion. The Contractor shall adhere to the requirements specified in Section 01785, Record Documents.

3.04 REQUIREMENTS FOR SUBMITTAL

- A. Additional documents, drawings, interface data, and other pertinent project submittal data are listed in specific sections of this Contract.

3.05 RECORD PRINTS

- A. The Contractor shall submit one set of all record prints before final completion. The record print or project records shall include submittals, catalog cuts, drawings, calculations, test reports, manufacturer's data, maintenance manuals, installation instructions, and operating manuals. All "record prints" shall be delivered to the Engineer in three-ring binders with dividers and shall be placed in order by Specification Section.

END OF SECTION

SECTION 01350
ENVIRONMENTAL PROTECTION PROCEDURES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Work covered by this Section consists of furnishing all labor, materials, and equipment and performing all work required for the prevention of environmental pollution in conformance with applicable laws and regulations during and as the result of construction operations under this Contract. In this Section *environmental pollution* is defined as the presence of chemical, physical, or biological elements or agents that adversely affect human health or welfare, unfavorably alter ecological balances of importance to human life, affect other species of importance to man, or degrade the utility of the environment for aesthetic and/or recreational purposes.
- B. The control of environmental pollution requires considering air, water, and land and involves managing noise and solid waste as well as other pollutants.
- C. The Contractor shall schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the Work. The Contractor shall provide erosion-control measures such as diversion channels, sedimentation or filtration systems, berms, staked hay bales, seeding, mulching or other special surface treatments that are required to prevent silting and muddying of streams, rivers, impoundments, lakes, etc. All erosion-control measures shall be in place in an area before any construction activity in that area. Specific requirements for erosion and sedimentation controls are specified in Section 02370, Erosion and Sedimentation Control.
- D. This Section is intended to ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. These are general guidelines. It is the Contractor's responsibility to determine the specific construction techniques to meet these guidelines.
- E. All phases of sedimentation and erosion control shall comply with and be subject to the laws of the State of Florida and the Project Environmental Resource Permit.

1.02 RELATED WORK

- A. Section 01100, Summary of Work.
- B. Section 02370, Erosion and Sedimentation Control.

1.03 SUBMITTALS

- A. The Contractor shall prepare a sedimentation and erosion-control drawing meeting the requirements of the law and furnish two copies of the approved Drawing to the Engineer.

1.04 WORK SEQUENCE

- A. Before beginning the Work, the Contractor shall meet with the Engineer to establish agreed-upon compliance with these provisions and administration of the environmental pollution control program.
- B. The Contractor shall remove temporary environmental control features when approved by the Engineer and incorporate permanent control features into the project at the earliest practicable time.

1.05 REFERENCE STANDARDS

- A. Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. Where this Section differs from these documents, the requirements of this Section shall apply.
- B. The Contractor shall comply with all applicable federal, state, and local laws and regulations concerning environmental pollution control and abatement.

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EROSION CONTROL

- A. The Contractor shall provide positive means of erosion control such as shallow ditches around construction to carry off surface water. Erosion-control measures, such as siltation basins, hay check dams, mulching, jute netting, and other equivalent techniques shall be used as appropriate. Surface water shall be prevented from flowing into excavated areas. Ditches shall be used around the construction area to carry away water resulting from dewatering excavated areas. At the completion of the Work, ditches shall be backfilled and the ground surface restored to its original condition.

3.02 PROTECTION OF SURFACE WATERS

- A. Care shall be taken to prevent or reduce to a minimum any damage to any surface water from pollution by debris, sediment, or other material or from the manipulation of equipment and/or materials in or near such streams. Water that has been used for washing or processing or that contains oils or sediments that will reduce the quality of the water in the stream shall not be directly returned to the stream. Such waters shall be diverted through a settling basin or filter before being directed into surface waters.
- B. The Contractor shall not discharge water from dewatering operations directly into any surface water or any stormwater system. Water from dewatering operations shall be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels.
- C. All preventative measures shall be taken to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action plan approved by the Florida Department of Environmental Protection and the US Environmental Protection Agency. The Contractor shall submit two copies of approved contingency plans to the Engineer.
- D. Water being flushed from structures or pipelines after disinfection with Cl_2 shall be treated with a dechlorination solution approved by the Engineer before discharge.

3.03 PROTECTION OF LAND RESOURCES

- A. After completion of construction, the Contractor shall restore land resources within the project boundaries and outside the limits of permanent work to a condition that will appear to be natural and not detract from the appearance of the

project. All construction activities shall be confined to areas shown on the Drawings.

- B. Outside of areas requiring earthwork for the construction of the new facilities, the Contractor shall not deface, injure, or destroy trees or shrubs nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the Engineer. Where such special emergency use is permitted, the Contractor shall first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use.
- C. The Contractor shall protect trees that may possibly be defaced, bruised, injured, or otherwise damaged by the construction equipment, dumping, or other operations by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly.
- D. Any trees or other landscape features scarred or damaged by the Contractor's equipment or operations shall be restored to the original or better condition. The Owner will decide the method of restoration to be used and whether damaged trees shall be treated and healed or removed and disposed of.
 - 1. All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1 inch in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.
 - 2. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the Contractor and, in the opinion of the Owner, are beyond saving shall be immediately removed and replaced.
- E. The Contractor's storage and other construction buildings required temporarily in the performance of the work shall be located in cleared portions of the job site or areas to be cleared as shown on the Drawings and approved by the Engineer and shall not be within wetlands or floodplains. Preserving the landscape shall be required in the selection of all sites and in the construction of buildings. Drawings showing storage facilities shall be submitted for the Engineer's approval.

- F. If the Contractor proposes to construct temporary roads or embankments and excavations for work areas, the Contractor shall submit the following for approval at least 10 days before the scheduled start of such temporary work:
1. A layout of all temporary roads, excavations, embankments, and drainage to be constructed within the work area.
 2. Details of temporary road construction.
 3. Drawings and cross sections of proposed embankments and their foundations, including a description of proposed materials.
 4. Landscaping drawings showing the proposed restoration of the area. The proposed removal of any trees and shrubs outside the limits of the existing clearing area must be indicated. Locations of guard posts or barriers required to control vehicular traffic and protect trees and shrubs to be maintained undamaged must also be indicated. The drawings shall provide for the obliteration of construction scars as such and shall provide for a natural appearing final condition of the area. Modification of the Contractor's approved drawings shall be made only with the written approval of the Engineer. No unauthorized road construction, excavation, or embankment construction including disposal areas will be permitted.
- G. The Contractor shall remove all signs of temporary construction facilities such as work areas, structures, foundations of temporary structures, stockpiles of excess waste materials, or any other vestiges of construction as directed by the Engineer. The disturbed areas shall be restored to preconstruction condition or better.
- H. All debris and excess material will be disposed of outside wetland or floodplain areas in an environmentally sound manner.

3.04 PROTECTION OF AIR QUALITY

- A. Burning—Burning will not be permitted at the project site for the disposal of refuse and debris.
- B. Dust Control—The Contractor shall maintain all excavations, embankment, stockpiles, access roads, waste areas, borrow areas, and all other work areas within or outside the project boundaries free from dust which could cause the standards for air pollution to be exceeded and which would cause a hazard or nuisance to others.
- C. An approved method of stabilization consisting of sprinkling or other similar methods will be permitted to control dust. The use of petroleum products is prohibited. The use of chlorides may be permitted with approval from the Engineer.

- D. To be approved, sprinkling must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor shall have sufficient competent equipment on the job to accomplish this. Dust control shall be performed as the Work proceeds and whenever a dust nuisance or hazard occurs, as determined by the Owner.

3.05 NOISE CONTROL

- A. The Contractor shall make every effort to minimize noises caused by the construction operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with federal and state regulations.

3.06 MAINTENANCE OF POLLUTION-CONTROL FACILITIES DURING CONSTRUCTION

- A. During the life of this Contract, the Contractor shall maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

END OF SECTION

SECTION 01400 QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. General:

1. This Section defines minimum requirements to be provided by the Contractor. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with the Contract Document requirements.
2. Specified tests, inspections, and related actions do not limit the Contractor's Quality Control (QC) procedures that facilitate compliance with the Contract Documents.

B. Definitions:

1. QA services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with Contract requirements.
2. QC services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction comply with requirements.

C. Payment:

1. Separate payment will not be made for providing and maintaining an effective QA and QC Program, and all costs associated with such a program shall be included in the applicable unit prices, lump-sum prices, or allowances contained in the Contract Price Breakdown.

1.02 RELATED WORK

- A. Section 01000, Project Requirements.
- B. Section 01300, Contract Administration.
- C. Section 02300, Earthwork for Structures.
- D. Section 02305, Earthwork for Utilities.
- E. Section 03301, Concrete and Reinforcing Steel.

1.03 SUBMITTALS (NOT USED)

1.04 WORK SEQUENCE

- A. Where reference is made to a particular standard, the revision in effect at the time of Bid opening shall apply except where a specific date is established.
- B. For products or workmanship specified by association, trades, or other consensus standards, the Contractor shall comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable code.
- C. If specified reference standards conflict with Contract Documents, the Contractor shall request clarification from the Engineer before proceeding.

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE

- A. The Contractor shall install all materials and equipment in a neat and first-class workman-like manner.
- B. The Contractor shall replace all existing paving, stabilized earth, curbs, driveways, sidewalks, fences, signs, and other improvements with the same type of material that was removed during construction or as directed by the Engineer without increase in the Contract Price or Contract Time.
- C. The Engineer reserves the right to direct the removal and replacement of any items which, in the Engineer's opinion, do not present an orderly and reasonably neat or workman-like appearance, provided such an orderly installation can be made using customary trade methods. The removal and replacement shall be done when directed in writing by the Engineer at the Contractor's own expense and without additional expense to the Owner.

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 TOLERANCES

- A. Monitor tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. If manufacturers' tolerances conflict with Contract Documents, request clarification from the Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.11 FIELD SAMPLES

- A. The Contractor shall furnish field samples at the site as required by individual Specifications Sections for review.
- B. Acceptable samples represent a quality level for the Work.
- C. Where field sample is specified in individual sections to be removed, the Contractor shall clear the area after the field sample has been accepted by the Engineer.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. The Contractor is responsible for QC and shall establish and maintain an effective QC system in compliance with the Contract Documents. The QC system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the Contract requirements. The system shall cover all Work and shall be keyed to the proposed design and construction sequence. The project QC Officer will be held responsible for the quality of work on the job and is subject to removal by the Engineer for non-compliance with quality requirements specified in the Contract. The project QC Officer in this context shall mean the individual with the responsibility for the overall management of the project quality.

3.02 QUALITY CONTROL PLAN

- A. General: After receipt of Notice to Proceed and before start of construction, the Contractor shall furnish for review by the Engineer the QC Plan proposed to

implement the requirements of the Contract. The Plan shall identify personnel, procedures, control, instructions, test, records, and forms to be used.

- B. Acceptance of Plan: Acceptance of the Contractor's plan is required before the start of Work. Acceptance is conditional and will be predicated on satisfactory performance during the Work. The Engineer reserves the right to require the Contractor to make changes in its QC Plan and operations, including removing personnel as necessary to obtain the quality specified.
- C. Notification of Changes: After acceptance of the QC Plan, the Contractor shall notify the Engineer in writing of any proposed change. Proposed changes are subject to acceptance by the Engineer.

3.03 SUBMITTALS

- A. Submittals shall be made as specified in Section 01330, Submittals and Acceptance.

3.04 TESTS

- A. Testing Services:
 - 1. All tests to determine compliance with the Contract Documents shall be performed by an independent commercial testing firm acceptable to the Owner. The testing firm's laboratory shall be staffed with experienced technicians, properly equipped, and fully qualified to perform the tests in accordance with the specified standards.
 - 2. Testing services provided by the Owner are for the sole benefit of the Owner; however, test results shall be available to the Contractor. When necessary, the Contractor shall interrupt its Work for Owner sampling and testing. The Contractor shall have no Claim for increase in Contract Price or Contract Time due to such interruption. The Contractor shall cooperate in these testing activities as needed.
 - 3. Testing, including sampling, will be performed by the testing firm's laboratory personnel in the general manner indicated in the Specifications.
- B. Transmittal of Test Reports: Written reports of tests and engineering data furnished by the Contractor for the Engineer's review shall be submitted as specified for Shop Drawings.

3.05 COMPLETION INSPECTION

- A. Final Completion Punch List: When notified by the Contractor, the Engineer shall inspect the Work and develop a "punch list" of items which do not conform to the

approved Drawings and Specifications. After receipt of the punch list, the Contractor shall provide the estimated date, to be approved by the Owner, by which the deficiencies will be corrected. Once this is accomplished, the Contractor shall notify the Engineer that the Facility is ready for the Engineer's final inspection.

- B. Final Inspection and Acceptance: The Contractor, Engineer, and the Owner Representative shall be in attendance at this final inspection. The final acceptance inspection will be formally scheduled by the Engineer. Notice will be given to the Engineer by the Contractor at least 14 days before the final inspection and must include the Contractor's assurance that all punch list items will be complete and acceptable by the date scheduled for the final inspection. Failure of the Contractor to have all Contract Work acceptably complete for this inspection will be cause for noncertification of final payment by the Engineer.

3.06 NOTIFICATION OF NONCOMPLIANCE

- A. The Engineer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Engineer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.07 REPAIR AND PROTECTION

- A. On completion of testing, inspection, sampling, and similar services, the Contractor shall repair damaged construction and restore substrates and finishes.
- B. The Contractor shall protect all construction exposed service activities.
- C. The repair and protection are the Contractor's responsibilities.

END OF SECTION

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SECTION 01450
TESTING AND TESTING LABORATORY SERVICES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall pay for the costs of all laboratory tests required to determine soil density, concrete compressive strength, and bacteriological clearance of water main. The cost of all testing shall be included in the cost of the item for which testing is required. All required testing shall be coordinated with and scheduled by the Contractor.
 - 1. The Contractor shall cooperate with the laboratory to facilitate the execution of required services.
 - 2. The Owner shall approve the selection of the testing laboratory.
 - 3. Employment of a testing laboratory shall in no way relieve the Contractor of the obligation to perform work in accordance with the requirements of the Contract Documents.

1.02 RELATED WORK

- A. Conditions of the Contract: Inspections and testing required by laws, ordinances, rules, regulations, orders, or approvals of public authorities.
- B. Respective Sections: Certification of products.
- C. Each Section listed: Laboratory tests required and standards for testing.
- D. Testing Laboratory inspection, sampling, and testing are required for but are not limited to the following:
 - 1. Section 02305, Earthwork for Utilities.
 - 2. Section 03301, Concrete and Reinforcing Steel.
 - 3. Section 15055, Piping Systems—General.
 - 4. Section 15144, Pressure Testing of Piping.

1.03 SUBMITTALS

- A. The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance.
- B. Submit to the Engineer for review a list and schedule of all tests to be conducted.

- C. Describe test procedures along with duration of tests.
- D. After each inspection and test, the Laboratory shall promptly submit two copies of the laboratory report to the Engineer, one copy to the Contractor, and one copy to the Owner.
- E. Include the following:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Name of field testing technician or inspector.
 - 4. Date and time of sampling or inspection.
 - 5. Identification of product and Specifications Section.
 - 6. Location in the Project.
 - 7. Type of inspection or test.
 - 8. Date of test.
 - 9. Results of test.
 - 10. Conformance with Contract Documents.
- F. When requested by the Engineer, provide interpretation of test results.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM E329—Standard Specification for Agencies Engaged in Construction Inspection and/or Testing.
 - 2. ASTM D3740—Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

1.06 QUALITY ASSURANCE

- A. The Laboratory is not authorized to do any of the following:
 - 1. Release, revoke, alter, or enlarge on requirements of Contract Documents.

2. Approve or accept any portion of the work.
3. Perform any duties of the Engineer of Record or the Engineer.

B. The Contractor shall be responsible for the following:

1. Cooperating with laboratory personnel, providing access to work and to manufacturer's operations.
2. Securing and delivering to the laboratory adequate quantities of representative samples of materials proposed to be used and which require testing.
3. Providing to the laboratory the preliminary design mix proposed to be used for concrete and other materials mixes that require control by the testing laboratory.
4. Furnishing incidental labor and facilities:
 - a. To provide access to work to be tested.
 - b. To obtain and handle samples at the project site or at the source of the product to be tested.
 - c. To facilitate inspections and tests.
 - d. To store and cure test samples.
5. Notifying the Engineer and laboratory sufficiently in advance of operations to allow the laboratory to assign personnel and schedule tests.
6. Employing and paying for the services of the same or a separate, equally qualified independent testing laboratory to perform additional inspections, sampling, and testing required for the Equipment Supplier or Contractor's (as applicable) convenience.

C. Materials and equipment used in the performance of Work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard requirements for quality and workmanship are indicated in the Contract Documents. The Engineer may require the equipment supplier or Contractor (as applicable) to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality and workmanship indicated in the Contract Documents. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the Contractor, and no extra charge to the Owner shall be allowed on account of such testing and certification.

- D. If the test and any subsequent retest results indicate that the materials or equipment fail to meet the requirements of the Contract Documents, the equipment supplier or Contractor (as applicable) shall pay for the laboratory costs directly to the testing firm and these will not be reimbursable to the equipment supplier or Contractor (as applicable).

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS

- A. Comply with requirements of ASTM E329 and ASTM D3740.
- B. Laboratory: Licensed to operate in Florida.
- C. Laboratory Staff: Maintain a full-time Professional Engineer registered in Florida on staff to review the services performed under this project.
- D. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to either National Bureau of Standards (NBS) or accepted values of natural physical constants.
- E. Provide qualified personnel at the site. Cooperate with the Engineer and Contractor in performing services.
- F. Perform specified inspection, sampling, and testing of products in accordance with specified standards.
- G. Ascertain compliance of materials and mixes with requirements of Contract Documents.
- H. Promptly notify the Engineer and Contractor of observed irregularities or non-conformance of Work or Products.
- I. Perform additional inspections and tests required by Engineer.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01500
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SCOPE OF WORK (NOT USED)

1.02 RELATED WORK (NOT USED)

1.03 SUBMITTALS (NOT USED)

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 RESPONSIBILITY

- A. This Section specifies the minimum requirements for temporary facilities, utilities, and controls required to provide an adequate and safe work site at every stage during construction of the Project. The Contractor is solely responsible for the requirements set forth in this Section.

1.11 ONSITE TEMPORARY

- A. Except as otherwise indicated, the Contractor shall provide trucked-in/trucked-out containerized or unitized services for start-up of construction operations at the site.

1.12 COSTS

- A. Except as otherwise indicated, the costs of providing and using temporary utility services are included in the contract sum.

1.13 TEMPORARY FACILITIES

- A. The types of utility services required for temporary use at the project site include the following (other specific services may be required for specific construction methods of operations):
 - 1. Electrical Power Service.
 - 2. Water Service (potable for certain uses).
 - 3. Sanitary.
 - 4. Storm Sewer or Open Drainage/Run-off Control.
 - 5. Gas (fuel) Service.

1.14 TEMPORARY ELECTRICITY

- A. The Contractor shall make the necessary applications and arrangements and pay all fees and charges for electrical energy for power and light necessary for proper completion of the Work and during its entire progress up to time of final acceptance by the Owner. The Contractor shall provide and pay for all temporary switches, connections, and meters.

1.15 TEMPORARY WATER

- A. The Contractor shall make all necessary application and arrangements and pay all fees and charges for water necessary for the proper completion of the Project up to the time of final acceptance. The Contractor shall provide and pay for any temporary piping and connections.

1.16 TEMPORARY SANITARY FACILITIES

- A. The Contractor shall provide adequate sanitary facilities for the use of those employed on the Work. Such facilities shall be made available when the first employees arrive on the site of the Work, shall be properly secluded from public observation, and shall be constructed and maintained during the progress of the Work in suitable numbers and at such points and in such manner as may be required or approved.

1.17 CLEANLINESS OF FACILITIES

- A. The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. He shall rigorously prohibit the committing of nuisances on the site of the Work, on the lands of the Owner, or on adjacent property.

1.18 TERMINATION AND REMOVAL

- A. At the time the need for a temporary utility service has ended or not later than the time of final completion, the Contractor shall promptly remove the installation unless requested by the Engineer to retain it for a longer period. Any work which may have been delayed or affected by the use of the temporary utility, including repairs to construction and grades and restoration and cleaning of exposed surfaces, shall be completed at this time. The Contractor shall replace any work damaged beyond acceptable restoration.

1.19 NOISE CONTROL

- A. The Contractor shall provide adequate protection against objectionable noise levels caused by the operation of construction equipment.

1.20 DUST CONTROL

- A. The Contractor shall provide for adequate protection against raising objectionable dust clouds caused by moving construction equipment, high winds, or any other cause.

1.21 WATER CONTROL

- A. The Contractor shall provide for satisfactory disposal of surplus water and shall submit a plan to the Engineer for review before initiating and implementing the plan. Prior approval shall be obtained from the proper authorities for the use of public or private lands or facilities for such disposal.

1.22 POLLUTION CONTROL

- A. The Contractor shall provide for adequate protection against polluting any public or private lands, lakes, ponds, rivers, streams, creeks, and other such areas by the disposal of surplus material in the form of solids, liquids, gases, or from any other cause.

1.23 ADVERSE IMPACT

- A. The Contractor shall evaluate and assess the impact of any adverse effects on the natural environment that may result from construction operations and shall operate to minimize pollution of air, ground, or surface waters vegetation, and afford the neighboring community the maximum protection during and up to completion of the construction project.

1.24 STREAMS, LAKES, AND OTHER BODIES OF WATER

- A. Refer to Section 01350, Environmental Protection Procedures.

1.25 CHEMICALS

- A. All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, must show approval of either US EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with instructions.

1.26 EROSION CONTROL

- A. The Contractor shall not expose by construction operations a larger area of erosive land at any one time than the minimum necessary for efficient construction operations, and the duration of exposure of the uncompleted construction to the elements shall be as short as practicable. Erosion-control features shall be constructed concurrently with other work and at the earliest practicable time.

1.27 STORAGE FACILITIES

- A. Refer to Section 01650, Delivery, Storage, and Handling.

1.28 TEMPORARY PROTECTION

- A. After installation, the Contractor shall provide substantial coverings as necessary to installed products to protect them from damage from traffic and subsequent construction operations. Coverings shall be removed when no longer needed.

1.29 ADJACENT TO WORK

- A. The Contractor shall protect from damage all property along the line of the Work or in the vicinity of or in any way affected by the Work, the removal or destruction of which is not called for by the Drawings. Wherever such property is

damaged due to the activities of the Contractor, it shall be immediately restored to original or better condition by the Contractor at no cost to the Owner.

1.30 REMEDY BY OWNER

- A. In case of failure on the part of the Contractor to restore such property or make good such damage or injury, the Owner may, after 48 hours' notice to the Contractor, proceed to repair, rebuild, or otherwise restore such property as may be deemed necessary and the cost of such repairs, rebuilding, or restoration will be deducted from any monies due or which may become due to the Contractor under this Contract.

1.31 PROTECTION FROM DAMAGE

- A. The Contractor shall be responsible for protecting property in the areas in the vicinity of the Project and for protecting his equipment, supplies, materials, and work against any damage resulting from the elements, such as flooding, rainstorm, wind damage, or other such damage, and shall be responsible for damage resulting from the same. The Contractor shall provide adequate drainage facilities, tie-downs, or other protection throughout the contract period for the protection of his, the Owner's, and other properties from such damage.

1.32 TRAFFIC REGULATION

- A. Signs, marking barricades, and procedures shall conform to the requirements of the Florida Department of Transportation Manual on Traffic Controls and Safe Practices for Street and Highway Construction, Maintenance, and Utility Operations.

1.33 BARRICADES

- A. The Contractor shall provide and maintain adequate barricades around open excavations.

1.34 SIGNAGE (NOT USED)

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01600 MATERIALS AND EQUIPMENT

PART 1 GENERAL

1.01 SCOPE OF WORK

This Section includes the minimum requirements for the furnished materials and equipment for this project. The more stringent requirements in the Technical Specification Sections shall take precedence over these requirements for any conflicts.

- A. Materials and equipment furnished by the Contractor shall be new and shall not have been in service at any other installation unless otherwise approved. They shall conform to applicable specifications approved in writing by the Engineer.
- B. Manufactured and fabricated products shall be designed, fabricated, and assembled in accordance with the best engineering and shop practices. Like parts of duplicate units shall be manufactured to standard sizes and gauges so as to be interchangeable.
- C. Quantities of items that are identical shall be by the same manufacturer, regardless of the Design Package breakdown.
- D. Equipment sizes, capacities, and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
- E. Materials and equipment shall not be used for any purpose other than that for which they are designed or specified.
- F. Where materials or equipment are specifically shown or specified to be reused in the Work, special care shall be used in removing, handling, storing, and reinstalling to ensure their proper function in the completed Work.
- G. Material and equipment incorporated into the Work:
 - 1. Shall conform to applicable specifications and standards.
 - 2. Shall comply with size, make, type, and quality specified or as specifically approved in writing by the Engineer.

1.02 RELATED WORK

- A. General Conditions.
- B. Supplementary Conditions.

- C. Section 01000, Project Requirements.
- D. Section 01740, Final Cleaning.
- E. Section 01780, Warranties and Bonds.

1.03 SUBMITTALS (NOT USED)

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 ACCEPTANCE OF MATERIAL AND EQUIPMENT

- A. Only new materials and equipment shall be incorporated in the Work. All materials and equipment furnished by the Contractor shall be subject to the inspection and acceptance of the Engineer. No material shall be delivered to the site that does not meet the Contract Specifications.
- B. The Contractor shall submit data and samples sufficiently early to permit consideration and acceptance before materials are necessary for incorporating in the work. Any delay of acceptance resulting from the Contractor's failure to submit samples or data promptly shall not be used as a basis of claim against the Owner.
- C. The materials and equipment used in the Work shall correspond to the approved samples or other data.
- D. If requested, the Contractor shall be required to submit to the Engineer ample evidence that each and every part of the materials and equipment to be furnished is of a reliable make and of a type that has been in successful operation within the

continental United States. No equipment will be considered unless the manufacturer has designed and manufactured equipment of a comparable type and size for at least 3 years. The Engineer or Owner will not allow any experimental or untried type of material to be installed.

- E. The equipment specified shall be carefully designed and installed to ensure that it adequately performs all required functions within the specified degree of precision. Each unit shall operate with each of the other parts of the equipment to provide a completely integrated system that shall operate to the satisfaction of the Engineer and Owner.
- F. All equipment, parts, and assemblies of equipment or parts entering into the Work shall be tested as specified. Unless waived in writing by the Engineer, all field and operating tests shall be made in the presence of the Engineer or the Engineer's authorized representative. When such a waiver is issued, the Contractor or manufacturer shall furnish sworn statements in duplicate of the tests conducted and the results of the tests to the Engineer.

1.11 MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION

- A. The equipment installation details shall suit the existing and furnished equipment and are subject to acceptance by the Engineer.
- B. Any changes or revisions made necessary by the type and dimensions of the equipment furnished shall be made at the expense of the Contractor who shall furnish detailed drawings showing such changes or revision for the acceptance of the Engineer.
- C. The installation of all work shall comply with the manufacturer's instructions. The Contractor shall obtain and distribute copies of such instructions to parties involved in the installation, including three copies to the Engineer. One complete set of instructions shall be maintained at the job site during installation and until the Project is complete.
- D. All products and equipment shall be handled, installed, connected, cleaned, conditioned, and adjusted in accordance with the manufacturer's instructions and specified requirements. Should job conditions or specified requirements conflict with the manufacturer's instructions, such conflicts shall be called to the Engineer's attention for resolution and revised instructions.
- E. The Contractor shall perform work according to the manufacturer's instructions and not omit any preparatory step or installation procedure unless the instructions are specifically modified or the step or procedure exempted by the Contract Documents.

1.12 ACCEPTANCE OF INSTALLATION

- A. The Engineer may accept an installation as ready for Substantial Completion when:
1. All components of the system are installed and tested, including without limitation, hydrostatic tests, leak tests, and all other component tests as appropriate.
 2. The appropriate certificates have been submitted.
 3. All other Contract requirements for Substantial Completion have been satisfied.

1.13 PROTECTION AGAINST ELECTROLYSIS

- A. Where dissimilar metals are used in conjunction with each other, suitable insulation shall be provided between adjoining surfaces so as to eliminate direct contact and any resultant electrolysis. The insulation shall be bituminous-impregnated felt, heavy -bituminous coatings, nonmetallic separators or washers, or other acceptable materials.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01650
DELIVERY, STORAGE, AND HANDLING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies the general requirements for the delivery, handling, storage, and protection of all items required in the construction of the Work. Specific requirements, if any, are specified with the related item.

1.02 RELATED WORK (NOT USED)

1.03 SUBMITTALS (NOT USED)

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in this Section for storing and protecting the items.
- B. The Contractor shall do the following:
 - 1. Materials and equipment shall be loaded and unloaded by methods affording adequate protection against damage. Every precaution shall be taken to prevent injury to the material or equipment during transportation and handling. Suitable power equipment shall be used and the material or equipment shall be under control at all times. Under no condition shall the material or equipment be dropped, bumped, or dragged. When a crane is used, a suitable hook or lift sling shall be used. The crane shall be so placed that all lifting is done in a vertical plane. Materials or equipment skid loaded, palletized, or handled on skidways shall not be skidded or rolled against material or equipment already unloaded.

2. Material and equipment shall be delivered to the job site by means that will adequately support it and not subject it to undue stresses. Material and equipment damaged or injured in the process of transportation unloading or handling shall be rejected and immediately removed from the site.
3. The Contractor shall coordinate the delivery of all materials, including those furnished by the Owner. The Contractor shall be responsible for the proper transport, handling, and storing of all materials, and materials shall be protected to ensure their expected performance. Delivery schedules shall be coordinated by the Contractor, in advance, so that the Work will be done in a timely manner.
4. The Contractor shall coordinate deliveries of products with construction schedules to avoid conflict with work and conditions at the site. The Contractor shall also do the following:
 - a. Deliver products in undamaged condition, in the manufacturer's original containers or packaging, with identifying labels intact and legible.
 - b. Immediately on delivery, inspect shipments to ensure compliance with requirements of the Contract Documents and approved submittals and to ensure that the products are properly protected and undamaged.
5. The Contractor shall provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.
6. All materials and equipment shall be stored on-site in complete compliance with the manufacturer's recommendations.
7. Store products subject to damage by the elements in weather-tight enclosures.
8. Maintain temperature and humidity within the ranges required by the manufacturer's instructions.
9. Store fabricated products above the ground, on blocking or skids to prevent soiling or staining. Cover products that are subject to deterioration with impervious sheet coverings, and provide adequate ventilation to avoid condensation.
10. All materials and equipment to be incorporated in the Work shall be handled and stored by the Contractor before, during, and after shipment in

a manner that will prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft, or damage of any kind to the material or equipment.

11. All materials which, in the opinion of the Engineer, have become so damaged as to be unfit for the use intended or specified shall be promptly removed from the site of the Work, and the Contractor shall receive no compensation for the damaged material or its removal.
12. The Contractor shall arrange storage in a manner to provide easy access for inspection and make periodic inspections of stored products to ensure that products are maintained under specified conditions, free from damage or deterioration.
13. The Contractor shall provide substantial coverings as necessary to protect installed products from traffic damage and subsequent construction operations and shall remove these coverings when they are no longer needed.
14. Should the Contractor fail to take proper action on storage and handling of equipment supplied under this Contract, within 7 days after written notice to do so has been given, the Owner retains the right to correct all deficiencies noted in the previously transmitted written notice and deduct the cost associated with these corrections from the Contractor's Contract. These costs may include expenditures for labor, equipment use, administrative, clerical, engineering, and any other costs associated with making the necessary corrections.
15. Schedule delivery to reduce long-term onsite storage before installation and/or operation. Under no circumstances shall equipment be delivered to the site more than 1 month before installation without written authorization from the Engineer.
16. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged, or sensitive to deterioration.
17. Deliver products to the site in the manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting, and installing.
18. Unload and place all items delivered to the site in a manner which will not hamper normal construction operation nor that of subcontractors and other contractors and will not interfere with the flow of necessary traffic.

19. Provide necessary equipment and personnel to unload all items delivered to the site.
20. The Contractor shall store and protect products in accordance with the manufacturer's instructions, with seals and labels intact and legible. Follow storage instructions, review them with the Engineer, and keep a written record of this. Arrange storage to permit access for inspection.
21. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
22. Store cement and lime under a roof and off the ground and keep it completely dry at all times. All miscellaneous and reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt or grease and in a position to prevent accumulations of standing water and to minimize rusting. Precast concrete shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping, or cracking.

1.09 QUALIFICATIONS (NOT USED)

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01720
FIELD ENGINEERING

PART 1 GENERAL

1.01 SCOPE OF WORK

The Contractor shall do the following:

- A. Provide and pay for the following field engineering services required for the Project:
 - 1. Survey work required in the execution of the Project.
 - 2. Civil, structural, or other professional engineering services specified or required to execute the Contractor's construction methods.
- B. Retain the services of a registered land surveyor licensed in Florida to do the following:
 - 1. Identify existing control points and property-line corner stakes as required.
 - 2. Verify all existing structure locations and all proposed structure corner locations within the Project site.
 - 3. Maintain an accurate location of all buried piping 4 inches in diameter and larger.

1.02 RELATED WORK

- A. Section 01100, Summary of Work.
- B. Section 01330, Submittals and Acceptance.
- C. Section 01650, Delivery, Storage, and Handling.
- D. Section 01785, Record Documents.

1.03 SUBMITTALS

- A. The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance.
- B. The Contractor shall submit to the Engineer the name and address of the registered land surveyor or professional engineer.
- C. On request of the Engineer, the Contractor shall submit documentation to verify the accuracy of field engineering work.

- D. The Contractor shall submit a certificate signed by a registered land surveyor certifying that elevations and locations of improvements are in conformance or non-conformance with Subcontract Documents.
- E. At the end of the Project and before final payment, submit the certified drawings as specified in Section 01785, Record Documents, with the Surveyor's title block, if applicable (signed and sealed by the registered land surveyor). These drawings shall be included with and made a part of the project record documents.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

- A. All work shall be performed in accordance with the Minimum Technical Standards set forth by the Board of Professional Surveyors and Mappers.

1.06 QUALITY ASSURANCE

- A. Existing basic horizontal and vertical control points for the project are those designated on Drawings.
- B. Locate and protect control points before starting site work and preserve all permanent reference points during construction:
 - 1. Make no changes or relocations without prior written notice to the Engineer.
 - 2. Report to the Engineer when any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations.
 - 3. Require the surveyor to correctly replace project control points that may be lost or destroyed.
 - 4. Establish replacements based on original survey control.

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS

- A. Registered land surveyor of the discipline required for the specific service on the project, currently licensed in Florida.

1.10 SYSTEM DESCRIPTION

- A. The Contractor shall establish a minimum of one permanent benchmark on the site, referenced to data established by survey control points:
 - 1. Record locations, with horizontal and vertical data, on Record Documents.
- B. Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means:
 - 1. Site improvements:
 - a. Stakes for grading, fill, and topsoil placement.
 - b. Utility slopes and invert elevations.
 - 2. Controlling lines and levels required for mechanical trades.
- C. From time to time, verify layouts by the same methods.
- D. Maintain a complete and accurate log of all control and survey work as the work progresses.
- E. As a condition for approval of monthly progress payment requests, update the project record drawings monthly based on the work performed during the month ending at the pay request. The Contractor shall coordinate this monthly with the Owner's representative on the site as part of the pay request.
- F. Maintain an accurate record of piping changes, revisions, and modifications.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01730
CUTTING, CORING, AND PATCHING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall provide all cutting, coring, fitting, and patching, including attendant excavation and backfill, required to complete the Work or to accomplish the following:
 - 1. Make the Work's several parts fit together properly.
 - 2. Uncover portions of the Work to provide for installation of ill-timed work.
 - 3. Remove and replace defective work.
 - 4. Remove and replace work not conforming to requirements of Contract Documents.
 - 5. Remove samples of installed work as specified for testing.
 - 6. Provide routine penetrations of non-structural surfaces for installing piping.

1.02 RELATED WORK

- A. Section 01100, Summary of Work.
- B. Division 2, Site Construction.
- C. Division 3, Concrete.

1.03 SUBMITTALS

- A. The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance.
- B. The Contractor shall submit a written request well in advance of executing any cutting or alteration that affects the following:
 - 1. Work of the Owner or any other Contractor.
 - 2. Structural value or integrity of any element of the Project.
 - 3. The integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
 - 4. The efficiency, operational life, maintenance, or safety of operational elements.
 - 5. Visual qualities of elements exposed to view.

- C. The written request shall include the following:
1. Identification of the Project.
 2. Description of affected Work.
 3. The necessity for cutting, altering, or excavating.
 4. The effect on the work of the Owner or any other Contractor or on the structural or weatherproof integrity of the Project.
 5. Description of proposed Work:
 - a. Scope of cutting, patching, alteration, or excavation.
 - b. Trades that will execute the Work.
 - c. Products proposed to be used.
 - d. Extent of refinishing to be done.
 6. Alternatives to cutting and patching.
 7. Cost proposal, when applicable.
 8. Written permission of any other Contractor whose work will be affected.
- D. The Contractor shall submit written notice to the Engineer designating the date and the time the Work will be uncovered.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

PART 2 PRODUCTS

2.01 MATERIALS

- A. Concrete for rough patching shall be as specified in Division 3, Concrete.
- B. Materials for finish patching shall be equal to those of adjacent construction.

PART 3 EXECUTION

3.01 INSPECTION

- A. The Contractor shall inspect existing conditions of project, including elements subject to damage or to movement during cutting and patching.
- B. After uncovering Work, the Contractor shall inspect conditions affecting installation of products or performance of the Work.
- C. The Contractor shall report unsatisfactory or questionable conditions to the Engineer in writing and shall not proceed with work until the Engineer has provided further instructions.
- D. All cutting and coring shall be performed in such a manner as to limit the extent of patching.
- E. All holes cut through concrete or slabs shall be core-drilled unless otherwise approved. No structural members shall be cut without approval of the Engineer, and all such cutting shall be done in a manner directed by the Engineer.
- F. Rough patching shall be such as to bring the cut or cored areas flush with existing construction unless otherwise shown. Finish patching shall match existing surfaces as approved.

3.02 PREPARATION

- A. Provide adequate temporary support as necessary to ensure the structural value or integrity of the affected portion of the Work.
- B. Provide devices and methods to protect other portions of the Project from damage.

- C. Provide protection from elements for that portion of the Project that may be exposed by cutting and patching work and maintain excavations free from water.
- D. Perform coring with approved non-impact rotary tools with diamond core drills. The size of the holes shall be suitable for pipe, conduit, sleeves, and equipment or mechanical seals to be installed.
- E. Ensure that all equipment conforms to OSHA standards and specifications pertaining to plugs, noise and fume pollution, wiring, and maintenance.
- F. Provide protection for existing equipment, utilities, and critical areas against water or other damage cause by drilling operation.
- G. Following drilling, vacuum or otherwise remove from the area all slurry or tailings resulting from coring operations.

3.03 PERFORMANCE

- A. Cut and demolish by methods that will prevent damage to other work and will provide proper surfaces to receive installation of repairs.
- B. Excavate and backfill by methods which will prevent settlement or damage to other work.
- C. Employ the original installer or fabricator to perform cutting and patching for the following:
 - 1. Weather-exposed or moisture-resistant elements.
 - 2. Sight-exposed finished surfaces.
- D. Fit and adjust products to provide a finished installation to comply with specified products, functions, tolerances, and finishes.
- E. Restore work that has been cut or removed; install new products to provide completed work in accordance with requirements of Subcontract Documents.
- F. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:
 - 1. For continuous surfaces, refinish to the nearest intersection.
 - 2. For an assembly, refinish the entire unit.
- G. Provide for Proper Pavement Restoration: The Contractor shall restore existing paving, including underdrains if any are encountered and broken into, and shall

replace or rebuild the paving using the same type of construction as was in the original. The Contractor shall be responsible for restoring all such work, including subgrade and base courses where present. The Contractor shall obtain and bear the expense of such local or other governmental permits as may be necessary.

END OF SECTION

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SECTION 01740
FINAL CLEANING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall execute cleaning during progress of the Work and at the completion of the Work as required by General Conditions.

1.02 RELATED WORK (NOT USED)

1.03 SUBMITTALS (NOT USED)

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 ENVIRONMENTAL CONCERNS

- A. Cleaning and disposal operations shall comply with codes, ordinances, regulations, and anti-pollution laws and shall adhere to the requirements specified in Section 01350, Environmental Protection Procedures.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS

The Contractor shall do the following:

- A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
- B. Use only those cleaning materials and methods recommended by the manufacturer of the surface material to be cleaned.
- C. Use cleaning materials only on surfaces recommended by the cleaning material manufacturer.

PART 3 EXECUTION

3.01 PERIODIC CLEANING

The Contractor shall do the following:

- A. Execute periodic cleaning to keep the work, the site, and adjacent properties free from accumulations of waste materials, rubbish, and windblown debris.
- B. Provide onsite containers for the collection of waste materials, debris, and rubbish.
- C. Remove waste materials, debris, and rubbish from the site periodically and dispose of at legal areas away from the site.

3.02 DUST CONTROL

The Contractor shall do the following:

- A. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces or private property.

3.03 FINAL CLEANING

The Contractor shall do the following:

- A. Employ skilled workers for final cleaning.

- B. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from materials and surfaces exposed to view.
- C. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.
- D. Before final completion, inspect exterior surfaces exposed to view and all work areas to verify that the entire Work is clean.

END OF SECTION

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SECTION 01770
PROJECT CLOSEOUT

PART 1 GENERAL

1.01 SCOPE OF WORK (NOT USED)

1.02 RELATED WORK

- A. General Conditions.
- B. Section 01000, Project Requirements.
- C. Section 01300, Contract Administration.
- D. Section 01740, Final Cleaning.
- E. Section 01785, Record Documents.

1.03 SUBMITTALS (NOT USED)

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 SUBSTANTIAL COMPLETION

- A. When the Contractor considers that the Work or designated portion of the Work is Substantially Complete, the Contractor shall submit written notice to the Engineer with a list of items to be completed or corrected.

- B. If the Engineer's inspection finds that the Work is not substantially complete, the Engineer will promptly notify the Contractor in writing, listing observed deficiencies.
- C. The Contractor shall remedy deficiencies and send a second written notice of Substantial Completion.
- D. When the Engineer finds the Work is Substantially Complete the Engineer will prepare a Certificate of Substantial Completion.

1.11 FINAL COMPLETION

- A. When the Contractor considers that the Work or designated period of the Work is complete, the Contractor shall submit written certification to the Engineer indicating the following:
 - 1. The Contract Documents have been reviewed.
 - 2. The Work has been inspected for compliance with the Contract Documents.
 - 3. The Work has been completed in accordance with the Contract Documents and deficiencies listed with Certificates of Substantial Completion have been corrected.
 - 4. The Work is complete and ready for final inspection.
 - 5. All required shop drawings, catalog cuts, maintenance manuals, instruction manuals, test reports, samples, operational manuals, and all other submittals have been submitted and reviewed by the Engineer.
 - 6. All deliverables have been delivered or placed as accepted by the Engineer.
- B. If the Engineer's inspection reveals that the Work is incomplete, the Engineer will promptly notify the Contractor in writing listing observed deficiencies.
- C. The Contractor shall remedy deficiencies and send a second certification of Final Completion.
- D. When the Engineer finds that the Work is complete, the Engineer will consider closeout submittals.

1.12 REINSPECTION FEES

- A. If the status of Completion of Work requires more than one re-inspection by the Engineer due to failure of the Work to comply with the Contractor's claims on initial inspection, the Owner will deduct from the final payment to the Contractor the amount of the Engineer's compensation for additional re-inspection services.

The Engineer shall be compensated at the hourly rates in Section 01100, Summary of Work, Part 1.12, Reimbursement Fees.

1.13 CLOSEOUT SUBMITTALS

- A. Evidence of Compliance with Requirements of Governing Authorities:
 - 1. All required Certificates of Inspection.
- B. Record Documents: Under provisions of Section 01785, Record Documents.
- C. Evidence of Payment and Release of Liens: In accordance with Conditions of the Contract.
- D. Consent of Surety to Final Payment.

1.14 STATEMENT OF ADJUSTMENT OF ACCOUNTS

- A. Submit final statement reflecting adjustments to total Contract Price, indicating the following:
 - 1. Original total Contract Price.
 - 2. Previous change orders.
 - 3. Changes under allowances.
 - 4. Changes under unit prices.
 - 5. Deductions for uncorrected Work.
 - 6. Penalties and bonuses.
 - 7. Deductions for liquidated damages.
 - 8. Deductions for re-inspection fees.
 - 9. Other adjustments to total Contract Price.
 - 10. Total Contract Price as adjusted.
 - 11. Previous payments.
 - 12. Sum remaining due.
- B. The Engineer will issue a final Change Order reflecting approved adjustments to the total Contract Price not previously made by change orders.

1.15 APPLICATION FOR FINAL PAYMENT

- A. Submit application for final payment in accordance with provisions of Conditions of the Contract.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01780
WARRANTIES AND BONDS

PART 1 GENERAL

1.01 SCOPE OF WORK

The Contractor shall do the following:

- A. Compile specified warranties and bonds.
- B. Co-execute submittals when so specified.
- C. Review submittals to verify compliance with Contract Documents.
- D. Submit submittals to the Engineer for review.

1.02 RELATED WORK

- A. General Conditions.
- B. Supplementary Conditions.
- C. Section 01600, Materials and Equipment.

1.03 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance:

- A. Assemble warranties, bonds, and service and maintenance contracts executed by each of the respective manufacturers, suppliers, and subcontractors.
- B. Number of original signed copies required: two each.
- C. Table of Contents: Neatly typed, in sequence of the Specifications. Provide completion information for each item as follows:
 - 1. Product or work item.
 - 2. Firm, address, telephone and fax numbers, and name and email of principal.
 - 3. Scope.
 - 4. Date of beginning of warranty, bond, or service and maintenance contract.
 - 5. Duration of warranty, bond, or service and maintenance contract.

6. Provide information for the Owner's personnel:
 - a. Proper procedure in case of failure.
 - b. Instances that might affect the validity of warranty or bond.
 7. Contractor, with address, telephone and fax numbers, and the name and email of responsible principal.
- D. Submittal of warranties, bonds, and service and maintenance contracts shall be included in submittals for review and before Final Completion with actual dates included.
- E. The Contractor's obligation to correct defective or nonconforming Work shall run for 1 year (or such longer period may otherwise be specified in the Contract Documents) beginning from the date Substantial Completion is achieved.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and this Section.
- B. All mechanical equipment together with devices of whatever nature and all components which are furnished and/or installed by the Contractor shall be guaranteed.
- C. The guarantee shall be against the manufacturing and/or design inadequacies, materials, and workmanship not in conformity, improper assembly, hidden damage, failure of devices and/or components, excessive leakage, or other circumstances which would cause the equipment to fail under normal design and/or specific operating conditions for 1 year or such longer period as may be shown and/or specified from and after the date of Substantial Completion.
- D. The Contractor shall replace and install each piece of equipment, device, or component which shall fail within the term specified above of the guarantee with reasonable promptness without increase in the Contract Price. If the Contractor fails to provide timely repairs as specified in this Section, the Owner shall issue a

claim against the Contractor's Bond. In some instances, if approved by the Owner, the Contractor may be allowed to repair the equipment.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 01785 RECORD DOCUMENTS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section details the minimum requirements for the Contractor for maintenance and recording of Record Documents and Record Drawings.

1.02 RELATED WORK

- A. Section 01000, Project Requirements.
- B. Section 01300, Contract Administration.
- C. Section 01330, Submittal and Acceptance.
- D. Section 01770, Project Closeout.

1.03 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance, and record documents as specified below:

- A. The Contractor shall institute a computerized record control program.
- B. The Contractor shall make documents and samples available at all times for inspection by the Engineer.
- C. At Contract closeout, the Contractor shall transmit Record Documents including Record Drawings, and samples with cover letter to the Engineer, listing the following:
 - 1. Date.
 - 2. Project title and number.
 - 3. Contractor's name and addresses.
 - 4. Number and Title of each Record Document.
 - 5. Signature of Contractor or its Authorized Representative.
 - 6. Contract Section and Subsection numbers.
 - 7. Location.

- D. Before assembling and submitting records, the Contractor shall review for completeness the records maintained by its subcontractors.
- E. Tracings of all Construction Documents and Shop Drawings made by the Contractor, subcontractors, and suppliers of materials or equipment shall be corrected to show the Work as actually completed or installed.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 PROJECT RECORD

- A. The Contractor shall label and file Record Documents and samples in accordance with the corresponding Specification Section number. Each document shall be labeled "PROJECT RECORD" in neat, large, printed letters. Record Documents shall be maintained in a clean, dry, and legible condition. Record documents shall not be used for construction purposes.

3.02 RECORDING

The Contractor shall record construction information as follows (refer to the Record Drawing Checklist at the end of this Section for additional requirements):

- A. Record and update daily Record information from field notes on a set of opaque drawings and to the satisfaction of the Engineer.
 - 1. The Contractor shall maintain a separate field log book containing swing ties to all underground infrastructure including, but not limited to, fittings, service taps, disinfection ports, buried valves, capped lines for future connections, and ends of water mains placed out of service. Swing ties shall be from permanent structures. The logbook shall become the property of the Owner at the conclusion of the project.
- B. Provide felt tip marking pens, maintaining separate colors for each major system, for recording information.
- C. Record information concurrently (daily) with construction progress. Work shall not be concealed until required information is recorded.
- D. Record Drawings shall be a special revision of the construction Drawings and shall reflect the following:
 - 1. Measured horizontal and vertical locations of underground utilities and appurtenances referenced to permanent surface improvements. **All vertical elevations shall be referenced to NAVD88.**
 - 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction.
 - 3. Field changes of dimension and detail.
 - 4. Changes made by modifications.
 - 5. Details not on original construction Drawings.
 - 6. The water distribution system shall be located and the locations shall be depicted and noted on the Record Drawings by swing ties from fixed structures, as well as northing and easting based on State Plane

Coordinates (NAD 83/11) Florida West Zone), and by elevation relative to established benchmarks.

- a. Elements of the utility systems that shall be located and noted by swing ties, northing, easting, and elevation:
 - (1) Valves (top of operating nut).
 - (2) All fittings.
 - (3) Top of pipe on water mains at intervals no greater than 100 feet apart, at fittings, and at locations where there is a substantial grade change.
 - b. At locations where a top of pipe elevation is required for pipeline, a top of ground or top of pavement elevation shall also be measured and noted on the Drawings.
 - c. Other miscellaneous utilities and structures with features at or above the ground surface shall be located and noted by northing, easting, and elevation.
7. On Record Drawings, at locations where the horizontal positions of constructed pipelines or other utility structures deviate by more than 5 feet (as scaled on the Drawing) from the horizontal positions that were shown on the construction Drawings, the actual positions of the pipelines or structures shall be measured and they shall be depicted in their actual positions on the Record Drawings and their original design positions shall be crossed-hatched out or screen shaded.
 8. Record information shall include a thorough description of the pipes that have been installed, including type of pipe material, size, class, dimension ratio, and other basic information.
 9. For new valves, the manufacture type (e.g., gate, plug, butterfly), size (pipe nominal diameter), and make (manufacturer) of each valve shall be noted on the Record Drawings.
 10. Record information shall be presented in a clear and comprehensible form.
 11. The drawing scales used in the Record Drawings shall be the same as were used in the construction Drawings, and the sheet number of each Record Drawing sheet shall be the same as the sheet numbers that were used on the construction Drawings from which the Record Drawings originate.

12. All sheets that were used to depict locations and elevations of utility structures in the construction Drawings shall be included in the Record Drawing set.
 13. Record Drawings shall accurately depict all existing improvements lying within the immediate vicinity of the constructed facilities. Existing improvements shall include, but not be limited to, sidewalks, fences, road surfaces, buildings, and other utilities. Immediate vicinity includes areas within utility easements includes areas within rights of way, and also includes areas within 15 feet of potable water mains, sanitary force mains, and gravity sewer mains. Immediate vicinity also includes areas within 10 feet of potable water meters, backflow preventers, and fire hydrants. Right of way, easements, and property corners shall be shown and shall be of sufficient detail as to determine if the constructed utilities are within the easements or rights of way. A reference to the recording document (O.R. Book or Plat Book and Page) shall be included with any depiction of a right-of-way or easement.
 14. Each roadway depicted on the Drawings shall have the correct roadway name noted on it.
 15. Horizontal locations required for valves, fittings, services, and other utility structures shall be to the center of each installation. Top of ground or pavement elevations required along pipelines shall be reported to the nearest 0.1 foot. Top of pipe elevations shall be reported to the nearest 0.1 foot. Elevations of manhole rims and manhole pipe inverts shall be reported to the nearest 0.1 foot. Top of wall elevations shall be reported to the nearest 0.02 foot.
 16. Abandoned-in-place pipes shall be shown in their actual positions.
- E. The Contractor shall present the field log book containing swing tie information and red-lined as-built Drawings at each monthly construction meeting for review by the Owner and Engineer. Failure to produce adequate as-built information will be grounds for withholding appropriate funds from the monthly payment applications.
- F. CAD Requirements for Record Drawings: The Contractor shall provide the Engineer and the City with a complete set of Record Drawings in the AutoCAD 2014 or 2016 version of AutoCAD format upon completion of the Work. No additional compensation will be allowed for the Contractor to provide the Record Drawings except those allowed in the bid form. The Contractor shall use the AutoCAD drawings furnished by the Engineer for this purpose. Record Drawings must be submitted in the AutoCAD format of the contract Drawings.

No other CAD software or format will be accepted. It is the Contractor's sole responsibility to ensure that the Record Drawings conform to the following CAD requirements:

1. Two sets of hard copy drawings shall be submitted to the Engineer as well as digital AutoCAD files on a CD-ROM. Each CD shall be clearly labeled with the appropriate project number, client name, date, and file names included on each CD. If files are compressed, a description of the compression software must be included along with a copy of the appropriate uncompressing software.
 2. All changes to drawings must be done in accordance with the same scale of the drawing revised and shall be delineated by placing a "cloud" around the areas revised and adding a revision triangle indicating the appropriate revision number.
 3. Each drawing must have the revision block completed to indicate the revision number, date, and initials of the person revising the drawing. The description of the revision must say "Record Drawing." This procedure must be followed for every drawing even when no changes are made to the drawing.
 4. All revisions to drawings must be put on separate layers with the layer names prefixed Record followed by the appropriate existing layer name. The colors and line types of the appropriate existing layers shall be adhered to when creating new layers.
 5. The Contractor shall supply one full set of Record Drawings on reproducible black line prints and five full sets of opaque copies.
- G. The Contractor shall have the Licensed Land Surveyor certify the Record Drawings as being true, correct, and complete, and data were collected in the field by the surveyor or by a representative under the direct supervision of the surveyor. All visible record features must be measured and located by the surveyor or by personnel under his or her direct supervision. The certifying surveyor shall be fully responsible for the accuracy of the record locations and elevations shown on the Record Drawings.
1. The Contractor's surveyor shall resurvey all visible surface structures as part of the Record Drawing submittal, including, but not limited to, valve boxes, hydrants, relocated or new water meter boxes, automatic blow-off assemblies, walls, gates, and weirs.
 2. Horizontal locations shall be tied to NAVD 88.



RECORD DRAWING CHECKLIST

The following information shall be addressed on the as-built plan

Project Name: _____

Engineer: _____

Date: _____

GENERAL:

- ☐ Do the record drawings indicate the locations and elevations of the improvements that have been built?
- ☐ Do the plans indicate the vertical datum and bench marks used as the basis for this site improvement?
- ☐ Are the record drawings a revision of the approved construction plans and depict design information crossed out and replaced by accurate record information?
- ☐ Has a final inspection of the site prior to any certificate of occupancy happened?
- ☐ Are the drawings signed and sealed by the Engineer of record attesting to compliance with the development approval and by the Professional Surveyor and Mapper attesting to accuracy on location and elevations?
- ☐ Did the City receive Two (2) signed and sealed "As-Built" / "Record Drawing" of each utility and/or roadway design?
- ☐ Did the City receive electronic PDF and AutoCAD® files of the project with any/all AutoCAD® supporting files? Version 2014 or 2016.
- ☐ Were the AutoCAD® drawings drawn in the correct vertical datum and projection?
- ☐ If there are any locations where the horizontal position of the constructed pipelines or structures deviated by more than 5-feet (as scaled on the drawings) from the horizontal positions that were shown on the construction drawings are the actual positions of the structures/pipelines depicted on the Record Drawings in their actual positions and their original design positions cross-hatched out or screen shaded?

WATER:

- ☐ Does the plan have all stationing recorded from tie-in valve/fitting and recorded along water main to each fitting, valve, service, fire hydrant, etc., with an offset measurement to each service, fire hydrant or valve where needed?
- ☐ Does the plan include all offsets to curb line or edge of road?
- ☐ Does the plan show all pipe sizes (mains and services) and type of pipe installed?
- ☐ Were there any field changes of dimensions, elevations and/or details? If so were they shown in a clouded area or by insert on the record drawings?
- ☐ Were all fittings, valves, fire hydrants, etc. located by horizontal and vertical measurements referenced to permanent surface improvements using Florida State Plane Coordinates?
- ☐ Is the elevation of the top of nut on all water valves shown on the record drawings?

WATER SERVICE CARD

Date of Installation _____

Contract Drawing Number _____

Service Line Size (inches) _____

Length of Water Service Line (feet) _____

Meter Size (inches) _____

Name _____

House/Business Address or Location:

Phone # _____

GPS coordinate @ main _____

GPS coordinate @ meter _____

Confirm Photos are attached _____

Installation Foreman _____

Service Layout

Provide a brief sketch of the installed configuration. Indicate lengths, depths of the water service, and show three ties to meter box and to corporation stop:

Depth @ Main (feet) _____

Depth @ Stub Out (feet) _____

Contractor Signature

Resident Observer Signature

(Rev 2 – 15 Oct 2006)

ISOLATION VALVE CARD

Date of Installation _____

Contract Drawing Number _____

Closest Street Address to Valve or Location of Valve

Size of Valve (inches) _____

Circle Type of Valve: Gate Butterfly

GPS Coordinate @ Valve _____

Installation Foreman _____

Confirm Photos are attached _____

Isolation Valve Layout

Provide a brief sketch of the installed configuration. Show depths of the water line and show three ties to the isolation valve:

Depth @ Main (feet) _____

Contractor Signature

Resident Observer Signature

(Rev 2 – 15 Oct 2006)

FIRE HYDRANT CARD

Date of Installation _____

Contract Drawing Number _____

Closest Street Address to Fire Hydrant or Location of Fire Hydrant

Length of Hydrant Line (feet) _____

List any offset fittings required _____

List Utilities requiring offset fittings _____

GPS coordinate @ main _____

GPS coordinate @ Hydrant _____

Installation Foreman _____

Confirm Photos are attached _____

Fire Hydrant Layout

Provide a brief sketch of the installed configuration. Indicate lengths, depths of the water line and hydrant, offset fittings, and show three ties to the fire hydrant isolation valve:

Depth @ Main (feet) _____

Depth @ Hydrant (feet) _____

Contractor Signature

Resident Observer Signature

(Rev 2 – 15 Oct 2006)

END OF SECTION

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DIVISION 2
SITE CONSTRUCTION

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SECTION 02220
DEMOLITION AND MODIFICATIONS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment, and incidentals required and demolish, modify, remove, and dispose of work shown on the Drawings and as specified in this Section.
- B. The work includes but is not limited to demolishing, modifying, and removing existing materials, equipment, or work necessary to install the new work as shown on the Drawings and as specified in this Section and to connect with existing work in an approved manner.
- C. Demolition, modifications, and removals that may be specified under other sections shall conform to requirements of this Section.
- D. Demolition and modifications include, but are not limited to:
 - 1. Grouting and abandoning existing asbestos cement water mains as shown on the Drawings.
 - 2. Removing valve boxes where shown on the Drawings.
 - 3. Removing water meters and meter boxes as shown on the Drawings.
 - 4. Capping existing water services as shown on the Drawings.
 - 5. Connecting new water mains to existing mains.
- E. Blasting and the use of explosives will not be permitted for any demolition work.

1.02 RELATED WORK

- A. Section 01100, Summary of Work.
- B. Section 01330, Submittals and Acceptance.
- C. Section 01350, Environmental Protection Procedures.

1.03 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance:

- A. Submit to the Engineer three copies of proposed methods and operations of demolition of the structures and modifications before beginning work. Include in

the schedule the coordination of shutoff, capping, and continuation of utility service as required.

- B. Furnish a detailed sequence of demolition and removal work to ensure the uninterrupted progress of the Owner's operations. The sequence shall be compatible with sequence of construction and shutdown coordination requirements.
- C. Before beginning demolition work, the Contractor shall complete all modifications necessary to maintain water service to all customers. Actual work shall not begin until new water mains and services have been cleared for use by the agency having jurisdiction and the Engineer has observed and approved the modifications and authorized beginning the demolition work in writing.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE

- A. The Contractor shall engage the service of a PE registered in the State of Florida for the design of the temporary access to and shoring/bracing of the existing structure and utilities during construction.

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 TESTING REQUIREMENTS (NOT USED)

1.11 MAINTENANCE (NOT USED)

1.12 RECORD DRAWINGS (NOT USED)

1.13 JOB CONDITIONS

A. Protection

1. The Contractor shall conduct the demolition and removal work to prevent damage or injury to structures, equipment, piping, instrumentation, conduit, light fixtures, etc., and occupants of the structures and to adjacent features which might result from falling debris or other causes, and so as not to interfere with the use and free and safe passage to and from adjacent structures.
2. Specific items to be protected include, but are not limited to, existing utilities, drainage structures, landscaping, driveways, headwalls, and sidewalks.

B. Scheduling

1. Carry out operations to avoid interference with operations and work in the existing facilities.

C. Notification

1. At least 48 hours before beginning demolition or removal, notify the Engineer in writing of the proposed schedule of the demolition or removal. No removals shall be started without the permission of the Engineer.

D. Conditions of Structures

1. The Owner and the Engineer assume no responsibility for the actual condition of the structures to be demolished or modified.
2. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner insofar as practicable.

E. Repairs to Damage

1. The Contractor shall promptly repair damage caused to adjacent facilities by demolition operation when directed by the Engineer and at no cost to the Owner. Repairs shall be made to a condition at least equal or better to that which existed before construction.

F. Traffic Access

1. The Contractor shall conduct demolition and modification operations and remove equipment and debris to ensure minimum interference with roads

onsite and to ensure minimum interference with occupied or used facilities.

2. Special attention is directed towards maintaining safe and convenient access to the existing facilities by the Owner's operations personnel.

1.14 DISPOSAL OF MATERIAL

- A. Salvageable material and equipment shall become the property of the Owner. The Contractor shall dismantle all such items to a size that can be readily handled and deliver them to a designated storage area.
- B. All other material and items of equipment shall become the Contractor's property and shall be removed from the site within 15 calendar days.
- C. Storing or selling removed items on the site will not be allowed.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. All materials and equipment removed from existing work shall become the property of the Contractor, except for those that the Owner has identified and marked for his/her use. All materials and equipment marked by the Owner to remain shall be carefully removed so as not to be damaged and shall be cleaned and stored on or adjacent to the site in a protected place specified by the Engineer or loaded onto trucks provided by the Owner.
- B. The Contractor shall dispose of all demolition materials, equipment, debris, and all other items—except those marked by the Owner to remain—off the site and in conformance with all existing applicable laws and regulations.
- C. Pollution Controls
 1. Refer to Section 01350, Environmental Protection Procedures.
 - a. Do not use water when it may create hazardous or objectionable conditions such as flooding and pollution.
 - b. Clean adjacent structures, facilities, and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to conditions equal to or better than existing before starting the work.

3.02 CLEAN-UP

- A. The Contractor shall remove from the site all debris resulting from the demolition operations as it accumulates. Upon completion of the work, the Contractor shall remove all materials, equipment, waste, and debris of every sort and shall leave the premises clean, neat, and orderly.

END OF SECTION

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SECTION 02300
EARTHWORK FOR STRUCTURES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, equipment, tools, appliances, and materials and perform all operations as needed, including but not limited to the following:
 - 1. Preparing subgrades for slab-on-grade, walks, pavements, and lawns and grasses.
 - 2. Excavating and backfilling for buildings and structures.
 - 3. Laying the subbase course for concrete sidewalks and pavements.

1.02 RELATED WORK

- A. Section 01350, Environmental Protection Procedures.
- B. Section 01500, Temporary Facilities and Controls.
- C. Section 03301, Concrete and Reinforcing Steel.

1.03 SUBMITTALS

The Contractor shall submit the following shop drawings in accordance with Section 01330, Submittals and Acceptance:

- A. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
 - 1. Classification according to ASTM D2487 of each onsite and borrow soil material proposed for fill and backfill.
 - 2. Laboratory compaction curve according to ASTM D1557 for each onsite and borrow soil material proposed for fill and backfill.
- B. The Contractor shall submit records before the start of this work. The Contractor shall verify that the existing conditions are correct as shown on the plans and mentioned in these Specifications. The Contractor shall note any discrepancies found immediately and notify the Owner and Engineer.

The records shall include the following:

1. The location of all underground utilities, structures, etc. surrounding the areas to be excavated that may be impacted by the work.
2. The location of test excavations.
3. The location of inspections.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

A. American Society for Testing and Materials (ASTM)

1. ASTM C33—Standard Specification for Concrete Aggregates.
2. ASTM D698—Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
3. ASTM D1556—Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
4. ASTM D1557—Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
5. ASTM D2167—Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
6. ASTM D2487—Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
7. ASTM D2937—Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method.
8. ASTM D2940—Standard Specification for Graded Aggregate Material For Bases or Subbases for Highways or Airports.
9. ASTM D3740—Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
10. ASTM D6938—Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
11. ASTM E329—Standard Specification for Agencies Engaged in Construction Inspection and/or Testing.

1.06 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E329 to conduct soil materials and definition testing, as documented according to ASTM D3740.
- B. The Contractor shall do the following:
 - 1. Ensure that excavations provide adequate working space and clearance for the work to be performed and for installing piping and buried utilities. In no case shall excavation faces be undercut.
 - 2. Ensure that foundation surfaces are clean and free of loose material of any kind when pipelines and buried utilities are placed on them.
 - 3. Excavate, trench, and backfill in compliance with applicable requirements of governing authorities having jurisdiction.
 - 4. Ensure that shoring and sheeting for excavations are designed by a Florida-registered Professional Engineer and are in accordance with the Occupational Safety and Health Administration (OSHA) Document 2226, *Safe Working Practices—Excavating and Trenching*.
 - 5. Before beginning any excavation or grading, ensure the accuracy of all survey data indicated on the Contract Drawings and in the Specifications and/or as provided. If the Contractor discovers any inaccuracies, errors, or omissions in the survey data, the Contractor shall immediately notify the Owner so that proper adjustments can be anticipated or ordered. If the Contractor begins any excavation or grading, this shall be considered an acceptance of the survey data by the Contractor, after which time the Contractor has no claim against the Owner resulting from alleged errors, omissions, or inaccuracies of the survey data.
 - 6. Ensure that tolerances for excavation are plus or minus 0.10 foot to the required line and to the required grade. Tolerance for compaction of in-place material shall be plus or minus 0.10 foot to the required grade, unless otherwise noted.
 - 7. Remove unsatisfactory materials and unsuitable materials including muck, silts, peat, and other loose and very loose compressible soils from excavations before placing pipe foundation, bedding, and buried utilities.

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 TESTING REQUIREMENTS (NOT USED)

1.11 MAINTENANCE (NOT USED)

1.12 RECORD DRAWINGS (NOT USED)

1.13 PROJECT CONDITIONS

- A. Existing Utilities: The Contractor shall not interrupt utilities serving facilities occupied by the Owner or others unless permitted to do so in writing by the Engineer and then only after arranging to provide temporary utility services according to requirements indicated.
 - 1. Notify the Owner and Engineer not less than 2 business days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without the Engineer's written permission.
 - 3. Contact a utility-locator service and obtain utility locations for the Project area before excavating.
- B. The Contractor shall demolish and completely remove from the site underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

1.14 DEFINITIONS

- A. *Backfill*: Soil material or controlled low-strength material used to fill an excavation.
 - 1. *Initial Backfill*: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 - 2. *Final Backfill*: Backfill placed over initial backfill to fill a trench.
- B. *Base Course*: The course placed between the subbase course and hot-mix asphalt paving.

- C. *Bedding Course*: The course placed over the excavated subgrade in a trench before laying pipe.
- D. *Borrow Soil*: Satisfactory soil imported from off-site for use as fill or backfill.
- E. *Drainage Course*: The course supporting the slab-on-grade that also minimizes the upward capillary flow of pore water.
- F. *Excavation*: Removing material encountered above subgrade elevations and to lines and dimensions indicated.
 - 1. *Authorized Additional Excavation*: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by the Engineer. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
 - 2. *Unauthorized Excavation*: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by the Engineer. Unauthorized excavation as well as remedial work directed by the Engineer shall be without additional compensation.
- G. *Fill*: Soil materials used to raise existing grades.
- H. *Structures*: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- I. *Subgrade*: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- J. *Utilities*: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

PART 2 PRODUCTS

2.01 SOIL MATERIALS

- A. *General*: The Contractor shall provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. *Satisfactory Soils*: ASTM D2487 Soil Classification Groups SW and SP or a combination of these groups, free of rock or gravel larger than 3 inches in any

dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

- C. Unsuitable Soils: Soil Classification Groups GW, GP, GM, GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D2487, or a combination of these groups.
 - 1. Unsuitable soils also include satisfactory soils not maintained within 2% of optimum moisture content at time of compaction.
- D. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940; with at least 95% passing a 1-1/2-inch sieve and not more than 8% passing a No. 200 sieve.
- E. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940; with at least 90% passing a 1-1/2-inch sieve and not more than 12% passing a No. 200 sieve.
- F. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940; except with 100% passing a 1-inch sieve and not more than 8% passing a No. 200 sieve.
- G. Sand: ASTM C33; fine aggregate, natural, or manufactured sand.
- H. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

PART 3 EXECUTION

3.01 PREPARATION

- A. The Contractor shall protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. The Contractor shall protect and maintain erosion and sedimentation controls that are specified in Section 01350, Environmental Protection Procedures.

3.02 DEWATERING

- A. The Contractor shall prevent surface water and groundwater from entering excavations, from ponding on prepared subgrades, and from flooding the Project site and surrounding area.

B. The Contractor shall protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.03 EXPLOSIVES

A. Explosives: Do not use explosives.

3.04 EXCAVATION, GENERAL

A. Unclassified Excavation: The Contractor shall excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsuitable soil materials, replace with satisfactory soil materials.

3.05 EXCAVATION FOR STRUCTURES

A. The Contractor shall excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.10 foot. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavations for Slabs: Do not disturb the bottom of the excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
2. Excavation for Underground Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 0.10 foot. Do not disturb the bottom of excavations intended as bearing surfaces.

3.06 EXCAVATION FOR WALKS AND PAVEMENTS

A. The Contractor shall excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.07 EXCAVATION FOR UTILITY TRENCHES (NOT USED)

3.08 SUBGRADE INSPECTION

- A. The Contractor shall notify the Engineer when excavations have reached the required subgrade.
- B. If the Engineer determines that unsuitable soil is present, the Contractor shall continue excavation and replace with compacted backfill or fill material as directed.
- C. The Contractor shall proof-roll subgrade below slabs and pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 - 1. Completely proof-roll the subgrade in one direction, repeating proof-rolling in the direction perpendicular to the first direction. Limit vehicle speed to 3 miles per hour (mph).
 - 2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by the Engineer, and replace with compacted backfill or fill as directed.
- D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices or additional work.
- E. As directed by the Engineer, the Contractor shall reconstruct subgrades damaged by rain, accumulated water, or construction activities without additional compensation.

3.09 UNAUTHORIZED EXCAVATION

- A. The Contractor shall fill unauthorized excavation under other construction or utility pipes as directed by the Engineer.

3.10 STORAGE OF SOIL MATERIALS

- A. The Contractor shall stockpile excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within the drip line of remaining trees.

3.11 BACKFILL

- A. The Contractor shall place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Constructing below finish grade, including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
 - 2. Surveying locations of underground utilities for Record Documents.
 - 3. Testing and inspecting underground utilities.
 - 4. Removing concrete formwork.
 - 5. Removing trash and debris.
 - 6. Removing temporary shoring, bracing, and sheeting.
 - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. The Contractor shall place backfill on subgrades free of mud.

3.12 UTILITY TRENCH BACKFILL (NOT USED)

3.13 SOIL FILL

- A. The Contractor shall plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. The Contractor shall place and compact fill material in layers to required elevations as follows:
 - 1. Under grass and planted areas, use satisfactory soil material.
 - 2. Under walks and pavements, use satisfactory soil material.
- C. The Contractor shall place soil fill on subgrades free of mud.

3.14 SOIL MOISTURE CONTROL

- A. The Contractor shall uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compacting to within 2% of optimum moisture content.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy.
 - 2. Remove and replace or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2% and is too wet to compact to the specified dry unit weight.

3.15 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. The Contractor shall place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. The Contractor shall place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.
- C. The Contractor shall compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D698:
 - 1. Under structures and pavements, scarify and recompact the top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95%.
 - 2. Under walkways, scarify and recompact the top 6 inches below subgrade and compact each layer of backfill or fill soil material at 92%.
 - 3. Under lawn or unpaved areas, scarify and recompact the top 6 inches below subgrade and compact each layer of backfill or fill soil material at 90%.
 - 4. For utility trenches, compact each layer of initial and final backfill soil material at 85% in unpaved lawn areas. Final backfill compaction shall meet the requirement listed above depending on the location of the trench.

3.16 GRADING

- A. General: The Contractor shall uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 - 1. Lawn or Unpaved Areas: Plus or minus 1 inch.
 - 2. Walks: Plus or minus 1 inch.
 - 3. Pavements: Plus or minus 1/2 inch.

3.17 FIELD QUALITY CONTROL

- A. The number and location of the tests shall be as specified in these Specifications and as directed by the Engineer during construction.
- B. The Contractor shall coordinate activity with the Engineer and the testing agency to permit testing as directed in the presence of the Engineer.
- C. The cost of all testing to achieve specified requirements shall be borne by the Contractor.
- D. The costs of any and all retests due to failure to achieve specified requirements shall be solely borne by the Contractor.
- E. All materials proposed for use shall be tested as follows:

Material	Required Test	Min No. Tests
Satisfactory Soil Materials	Soil Classification using ASTM D2487 (including all tests contained therein)	One per source of materials to determine conformance with materials specified herein; additional test whenever there is any apparent change.
	Soil moisture-density relationship using Modified Proctor ASTM D1557	One per source of material or apparent change in material.

- F. The Contractor shall allow the testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after the test results for previously completed work comply with requirements.
- G. The testing agency will test compaction of soils in place according to ASTM D1556, ASTM D2167, ASTM D2937, and ASTM D6938 as applicable. Tests will be performed at the following locations and frequencies:
 - 1. Paved Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2,000 square feet or less of paved slab area, but in no case fewer than three tests.
 - 2. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 100 feet or less of trench length but no fewer than two tests.
- H. When the testing agency reports that subgrades, fills, or backfills have not achieved the degree of compaction specified, the Contractor shall scarify and moisten or aerate or remove and replace soil to the depth required and recompact and retest until specified compaction is obtained.

I. The approved testing agency shall transmit copies of field-testing results as follows:

1. One copy to the Owner.
2. One copy to the Engineer.
3. One copy to the Contractor.

The field test reports shall include, at a minimum, project title; project location; location of sample(s) tested; time of testing; date of testing; testing person's full name; testing agency name, address, and telephone number; and test results.

J. No soil material shall be used until (1) the Engineer has reviewed and approved test reports and (2) the Contractor submits certification that the soil material proposed for construction is clean and meets gradation and other parameters specified in this Specification.

K. At no cost to the Owner, the Contractor shall remove and replace or correct all materials and work that tests indicate do not conform, in the opinion of the Engineer, to the requirements of these Specifications.

L. The results of in-place density tests shall be considered satisfactory if the density in each instance is equal to or greater than the specified density. Soil moisture content at the time of testing shall conform to requirements of these Specifications.

3.18 PROTECTION

A. Protecting Graded Areas: The Contractor shall protect newly graded areas from traffic and erosion and keep them free of trash and debris.

B. The Contractor shall repair and reestablish grades to the specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by the Engineer and reshape and recompact.

- C. Where settling occurs before the Project Correction Period elapses, The Contractor shall remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.19 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

END OF SECTION

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SECTION 02305
EARTHWORK FOR UTILITIES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall provide all materials, equipment, labor, and work as needed to completely construct the project in accordance with the Contract Documents. This work includes but is not limited to the following:
1. Excavating and removing unsatisfactory materials.
 2. Preparing trench foundations.
 3. Providing satisfactory material for all trenches as specified and as required.
 4. Obtaining, storing, maintaining, and disposing of materials.
 5. Dewatering, shoring, and sheeting.
 6. Placing, compacting, testing, final grading, and demolishing subgrade.
 7. Performing all other work required by the Contract Documents.
- B. The Contractor is responsible for performing all work so as not to damage existing roadways, facilities, utilities, structures, etc. and shall repair and replace such damage to equal or better than its original undamaged condition without cost to the Owner.
- C. The Contractor shall examine the site before submitting a bid, taking into consideration all conditions that may affect the work.
- D. The Contractor shall coordinate all additional subsurface investigations and testing included with this work with the Engineer before performing the excavation and foundation preparation work. In general, if the Contractor finds different and unsuitable/unsatisfactory soil conditions during the work, the Contractor shall notify the Engineer and the Owner immediately.

1.02 RELATED WORK

- A. Section 01350, Environmental Protection Procedures.
- B. Section 02300, Earthwork for Structures.

1.03 SUBMITTALS

The Contractor shall submit the following shop drawings in accordance with Section 01330, Submittals and Acceptance:

- A. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
 - 1. Classification according to ASTM D2487 of each onsite and borrow soil material proposed for fill and backfill.
 - 2. Laboratory compaction curve according to ASTM D1557 for each onsite and borrow soil material proposed for fill and backfill.
- B. The Contractor shall submit records before the start of this work. The Contractor shall verify that the existing conditions are correct as shown on the plans and mentioned in these Specifications. The Contractor shall note any discrepancies found immediately and notify the Owner and Engineer.

The records shall include the following:

- 1. Location of all existing underground utilities, structures, etc., surrounding the areas to be excavated that may be impacted by the Work.
- 2. Location of test excavations.
- 3. Location of inspections.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply:

- A. OSHA Excavation Safety Standards, 29 CFR 1926, Subpart P
- B. Florida Trench Safety Act (90-96, Laws of Florida)
- C. American Society for Testing and Materials (ASTM)
 - 1. ASTM D1556—Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.

2. ASTM D1557—Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
3. ASTM D2937—Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method.
4. ASTM D2487—Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
5. ASTM D3282—Standard Practice for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
6. ASTM D3740—Standard Practice for Evaluation of Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used In Engineering Design and Construction.
7. ASTM D6938—Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
8. ASTM E329—Standard Specification for Agencies Engaged in Construction Inspection and/or Testing.

D. American Wood Protection Association (AWPA)

1. AWPA C1—All Timber Products—Preservative Treatment by Pressure Processes.
2. AWPA C3—Piles – Preservative Treatment by Pressure Processes.

1.06 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E329 to conduct soil materials and definition testing, as documented according to ASTM D3740.
- B. The Contractor shall do the following:
 1. Ensure that excavations provide adequate working space and clearance for the work to be performed and for installing piping and buried utilities. In no case shall excavation faces be undercut.
 2. Ensure that foundation surfaces are clean and free of loose material of any kind when pipelines and buried utilities are placed on them.
 3. Excavate, trench, and backfill in compliance with applicable requirements of governing authorities having jurisdiction.
 4. Ensure that shoring and sheeting for excavations are designed by a Florida-registered Professional Engineer and are in accordance with the Occupational Safety and Health Administration (OSHA) Document 2226, *Safe Working Practices—Excavating and Trenching*.

5. Before beginning any excavation or grading, ensure the accuracy of all survey data indicated on the Contract Drawings and in these Specifications and/or as provided. If the Contractor discovers any inaccuracies, errors, or omissions in the survey data, the Contractor shall immediately notify the Owner so that proper adjustments can be anticipated or ordered. If the Contractor begins any excavation or grading, this shall be considered an acceptance of the survey data by the Contractor, after which time the Contractor has no claim against the Owner resulting from alleged errors, omissions, or inaccuracies of the survey data.
6. Ensure that tolerances for excavation are ± 0.10 foot to the required line and to the required grade. Tolerance for compaction of in-place material shall be ± 0.10 foot to the required grade.
7. Ensure that all trench materials derived from the project site and imported to this site are examined, tested, and classified by an Engineer-approved soils testing laboratory.
8. Remove unsatisfactory materials and unsuitable materials including muck, silts, peat, and other loose and very loose compressible soils from excavations before placing pipe foundation, bedding, and buried utilities.

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 PROJECT CONDITIONS

- A. Existing Utilities: The Contractor shall not interrupt utilities serving facilities occupied by the Owner or others unless permitted to do so in writing by the Engineer and then only after arranging to provide temporary utility services according to the requirements indicated.
 1. Notify the Engineer not less than 2 days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without the Engineer's written permission.
 3. Contact utility-locator service and obtain utility locations for the Project Area before excavating.
- B. The Contractor shall demolish and completely remove from the site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

1.11 DEFINITIONS

- A. *Backfill*: Soil material or controlled low-strength material used to fill an excavation.
1. *Initial Backfill*: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 2. *Final Backfill*: Backfill placed over initial backfill to fill a trench.
- B. *Base Course*: The course placed between the subbase course and hot-mix asphalt paving.
- C. *Bedding Course*: The course placed over the excavated subgrade in a trench before laying pipe.
- D. *Borrow Soil*: Satisfactory soil imported from off-site for use as fill or backfill.
- E. *Drainage Course*: The course supporting the slab-on-grade that also minimizes upward capillary flow of pore water.
- F. *Excavation*: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
1. *Authorized Additional Excavation*: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by the Engineer. Authorized additional excavation and replacement material will be paid for according to the Contract provisions for unit prices.
 2. *Bulk Excavation*: Excavation more than 10 feet in width and more than 30 feet in length.
 3. *Unauthorized Excavation*: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by the Engineer. Unauthorized excavation, as well as remedial work directed by the Engineer, shall be without additional compensation.

- G. *Fill*: Soil materials used to raise existing grades.
- H. *Structures*: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- I. *Subgrade*: The surface or elevation remaining after completing excavation, or the top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- J. *Utilities*: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.12 TESTING REQUIREMENTS

- A. The Contractor shall furnish a soil survey for satisfactory material and samples of materials.
- B. Testing for source material, for classification, and for prequalification of material (on or off site) shall be performed by an independent testing agency retained by the Contractor and approved by the Engineer.
- C. Testing for in-place compacted fill shall be performed by the same independent testing agency as approved by the Engineer and retained by the Contractor.
- D. The number and location of the tests shall be as specified in these Specifications and as directed by the Engineer during construction.
- E. The Contractor shall coordinate activity with the Engineer and the testing agency to permit testing as directed in the presence of the Engineer.
- F. The cost of all testing to achieve specified requirements shall be borne by the Contractor.
- G. The costs of any and all retests due to failure to achieve specified requirements shall be solely borne by the Contractor.

H. All materials proposed for use shall be tested as follows:

Material	Required Test	Min. No. Tests
Satisfactory Soil Materials	Soil Classification using ASTM D2487 (including all tests contained therein)	One per source of materials to determine conformance with materials specified in these Specifications; additional tests whenever there is any apparent change.
	Soil moisture-density relationship using Modified Proctor ASTM D1557	One per source of material or apparent change in material.

I. Soil materials shall be tested during construction as follows:

Material	Required Test	Min. No. Tests
Satisfactory Soil Material in-place after compaction	Field Density ASTM D1556-Sand Cone Method, or ASTM D6938-Nuclear Density Method, or ASTM D2937-Drive Cylinder Method	For each layer of trench bottom subgrade before addition of soil materials, refill, bedding, and backfill, and for each 100 lineal feet of trench or fraction thereof, whichever is greater; two tests for each drainage, manhole, or wet well structure; additional test whenever there is any change in native soil, groundwater, or soil moisture conditions.

J. The approved testing agency shall transmit copies of required laboratory test results as follows:

1. One copy to the Owner.
2. One copy to the Engineer.
3. One copy to the Contractor.

The laboratory test reports shall include, at a minimum, project title; project location; location of sample; source, time, and date of testing; testing agency's name, address, and telephone number; and test results. Each test report shall be signed and sealed by the Professional Engineer representing the testing agency as specified in these Specifications.

K. The approved testing agency shall transmit copies of field testing results as follows:

1. One copy to the Owner.
2. One copy to the Engineer.
3. One copy to the Contractor.

The field test reports shall include, at a minimum, project title; project location; location of sample(s) tested; time of testing; date of testing; testing person's full name; testing agency name, address, and telephone number; and test results.

- L. No soil material shall be used until 1) the Engineer has reviewed and approved test reports and 2) the Contractor submits certification that the soil material proposed for construction is clean and meets gradation and other parameters specified in these Specifications.
- M. At no cost to the Owner, the Contractor shall remove and replace or correct all materials and work that tests indicate do not conform, in the opinion of the Engineer, to the requirements of these Specifications.
- N. The results of in-place density tests shall be considered satisfactory if the density in each instance is equal to or greater than the specified density. Soil moisture content at the time of testing shall conform to requirements of these Specifications.
- O. Where the tests reveal unsatisfactory compaction, the Contractor shall re-excavate, backfill, recompact, and/or rework the backfill as required to obtain the required degree of compaction over the entire depth of the excavation.

1.13 MAINTENANCE (NOT USED)

1.14 RECORD DRAWINGS (NOT USED)

PART 2 PRODUCTS

2.01 STRUCTURAL MATERIALS

- A. Materials used for shoring and bracing, such as sheet piling, uprights, stringers, and crossbraces, shall be in good serviceable condition. Any timber used shall be sound and free from large or loose knots.
- B. Pressure-treated timber shall be used where wood sheeting or piling is specified or indicated to be cut and left in place.

2.02 TRENCH SOIL MATERIALS

- A. Materials used for trench construction shall be free of clumps of clay, rock or gravel, debris, waste, frozen materials, and other deleterious matter as determined by the Engineer and shall be satisfactory soil materials as follows:

Area Classification	Soil Materials
In excavations and trenches	Excavated and borrow material that has been sampled, tested, and approved as "Satisfactory Soil Material."

B. Satisfactory Soil Materials

1. Soil Classification Groups

Satisfactory soil materials for each trench shall be as follows:

Satisfactory Soil Material (ASTM D3282, Soil Classification Groups)		
In-situ Foundation	Bedding, Haunching, and Initial Backfill	Final Backfill
SW SP	SW SP	SW SP

2. Maximum Particle Size Limitations for Satisfactory Soil Materials

The maximum allowable particle size for satisfactory soil materials within each trench for each type of utility shall be as follows:

Conduit	Maximum Allowable Particle Size		
	In-situ Foundation	Bedding, Haunching, and Initial Backfill	Final Backfill
Plastic Pipe (PVC, CPVC, HDPE, etc.) less than 6-inch-diameter	See Note 1	1/2 inch	3 inches
Plastic Pipe (PVC, CPVC, HDPE, etc.) 6-inch-diameter and Larger	See Note 1	3/4 inch	3 inches
Concrete Pipe			
Steel Pipe			
Ductile Iron Pipe	See Note 1	3/4 inch or three times the wall thickness, whichever is less	3 inches
Fiberglass Pipe			
Other Conduit Materials	See Note 2	See Note 2	See Note 2

- (1) There is no requirement when satisfactory undisturbed native soil material is used. Disturbed portions of the foundation and/or unsatisfactory native soil material shall be replaced with satisfactory soil materials meeting all the requirements for Bedding.
- (2) The maximum allowable particle size shall be in accordance with the manufacturer's written recommendation.

3. Additional Requirements of Satisfactory Materials

Satisfactory soil materials shall be free of debris, waste, vegetation, or other deleterious matter. Soils within 4 inches of the exterior surface of the pipe shall be free of gravel, stones, or other materials that may abrade the pipe surface.

C. Unsatisfactory Materials

Unsatisfactory soil materials shall mean ASTM D2487, Soil Classification Groups GW, GP, GM, GC, SC, CL, ML, OL, CH, MH, OH, and PT and other highly organic soils and soil materials of any classification that have a moisture content at the time of compaction beyond the range of 1 percentage point below and 3 percentage points above the optimum moisture content of the soil material as determined by moisture-density relations test.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

The Contractor shall do the following:

- A. Carefully verify by hand methods the location of all surrounding underground utilities before performing utility excavations and trenches.
- B. Protect utilities to be left in place from damage.
- C. Do not interrupt existing utilities serving facilities occupied and used by the Owner, except when permitted in writing by the Owner.
- D. Protect benchmarks, survey points, and existing structures, roads, sidewalks, monitoring wells, paving, curbs, etc., against damage from equipment, vehicular or foot traffic, settlement, lateral movement, undermining, washout, and all construction-related activities.
- E. Repair and replace damage to existing facilities to equal or better than their original undamaged condition without cost to the Owner and to the approval of the Engineer.
- F. Excavate and trench in ways that will prevent surface water and subsurface water from flowing into excavations and will also prevent flooding of the site and surrounding area.

- G. Protect excavations and trenching by shoring, bracing, sheet piling, underpinning, or other methods as required to prevent cave-ins or loose dirt from falling into excavations and trenches.
- H. Do not operate earth-moving equipment within 5 feet of walls of concrete structures for depositing or compacting backfill material.
- I. Compact the backfill material placed next to concrete walls with hand-operated tampers or similar equipment that will not damage the structure.
- J. Excavate, fill, backfill, and grade to elevations required by the Contract Documents.
- K. Pile excavated materials suitable for backfill in an orderly manner a sufficient distance from excavations to prevent overloading, slides, and cave-ins.
- L. Do not obstruct access ways, roadways, and plant facilities.
- M. Dewater excavations and trenches as necessary.
- N. Refer to the Contract Drawings for additional requirements related to earthwork and protection of existing features.

3.02 TRENCH EXCAVATION

- A. Before excavating the trench, the Contractor shall prepare the surface including clearing and grubbing.
- B. The Contractor shall be required to fully comply with all applicable OSHA Excavation Safety Standards and to abide by them as covered by the most current version of the Florida Trench Safety Act (90-96, Laws of Florida).
- C. The Contractor shall ensure that mechanical equipment used for trench excavation shall be of a type, design, and construction and shall be so operated that conduit/utility, when accurately laid to specified alignment, will be centered in the trench with adequate clearance between the conduit/utility and sidewalls of the trench. Undercutting the trench sidewall to obtain clearance will not be permitted.
- D. The Contractor shall not use mechanical equipment in locations where its operation would cause damage to trees, buildings, culverts, other existing

property, utilities, structures, etc. above or below ground. In all such locations, the Contractor shall use hand excavating methods.

- E. The Contractor shall not use blasting.
- F. The Contractor shall cut trenches sufficiently wide to enable proper installation of services and to allow for testing and inspection. The Contractor shall also trim and shape trench bottoms and leave them free of irregularities, lumps, and projections. Trench width shall be excavated as specified on the Contract Drawings.
- G. The Contractor shall construct trench walls so as to avoid side wall collapse or sloughing. Trenches shall be either braced or open construction in accordance with the Contract Documents. No separate payment will be made for any special procedure used in connection with the excavation.
- H. Where sheeting and bracing are not required, the Contractor shall construct trench walls in the bottom of the excavation as vertical as possible to the maximum height allowable by OSHA. Trench walls above this height shall be sloped to guard against side wall collapse or sloughing as specified on the Contract Drawings.
- I. Where sheeting and bracing are required, the sheeting and bracing system shall meet the requirements in these Specifications.
- J. Excavations shall be to the design elevations shown on the Contract Drawings or as specified, unless unsatisfactory or unsuitable foundation materials are encountered in the bottom of the excavation. Where unsatisfactory or unsuitable foundation materials are encountered, this material shall be undercut and removed as indicated on the Contract Drawings and replaced with satisfactory soil material meeting all the requirements for Bedding. The lift thicknesses and compaction requirements for the replacement soil shall also meet the requirements for Bedding.
- K. The Contractor shall be careful not to overexcavate except where necessary to remove unsatisfactory or unsuitable materials, irregularities, lumps, rock, and projections. Unnecessary overexcavation shall be replaced as specified in these Specifications at the Contractor's sole expense.
- L. The Contractor shall accurately grade bedding soil materials at the bottoms of the trenches to provide uniform bearing and support for each section of conduit/utility at every point along its entire length except where it is necessary to excavate the bedding for conduit/utility bells (e.g., pipe bells), etc., or for proper sealing of

conduit/utility joints. Abrupt changes in grade of the trench bottom shall be avoided.

- M. The Contractor shall dig bell holes and depressions after the bedding has been graded to ensure that the conduit/utility rests on the prepared bedding for as much of its full length as practicable. Bell holes and depressions shall be only of such length, depth, and width as required to make the joint.
- N. The Contractor shall do the following:
 - 1. Pile all excavated material in a manner that will not endanger the work or erode the stormwater management facilities or water courses.
 - 2. Avoid obstructing sidewalks, driveways, and plant facilities.
 - 3. Leave hydrants, valve pit covers, valve boxes, or other utility controls unobstructed and accessible.
 - 4. Keep gutters, drainage inlets, natural water courses, and miscellaneous drainage structures clear or make other satisfactory provisions for their proper operation.
- O. The Contractor shall keep all satisfactory materials that are suitable for use/reuse in the trench construction separated from unsatisfactory materials.
- P. Except where otherwise authorized, indicated, or specified, the Contractor shall replace, at the Contractor's own expense, all materials excavated below the bottom of concrete walls, footings, slabs on grade, and foundations with concrete or flowable fill, as directed by the Engineer.
- Q. The Contractor shall adhere to these Additional Excavation Requirements for piping:
 - 1. Excavate trenches so that the piping can be laid to the lines, grades, and elevations indicated on the Contract Drawings.
 - 2. For piping designated to be laid to a minimum cover requirement, grade trenches to avoid high and low points to the extent practical. Record Drawings of such pipes shall present top-of-pipe and grade elevations at all high and low points along each pipe segment, at the end points of each pipe segments, and at intervals not to exceed 100 feet along each pipe segment. If, in the opinion of the Engineer, additional air release and/or vacuum relief valves are required, the Contractor shall install the additional items as directed by the Engineer.
 - 3. Except at locations specifically indicated otherwise on the Contract Drawings, the required minimum cover over the top of the pipe from finished grade is 3 feet.

4. Continue dewatering operations along each pipe segment until the required minimum cover is provided. During the dewatering operations, the ground water level in the trench shall remain at all times a minimum of 1 foot below bottom of trench excavations.

R. The Contractor shall adhere to these Additional Excavation Requirements for Electrical Utilities:

1. Avoid abrupt changes in grade of the trench bottom.
2. The required minimum cover over the top of electrical conduits from finished grade shall be as follows:

	Electrical Conduits (Lines less than 5 kV)	Electrical Conduits (Lines 5 kV and up)
Minimum Cover	2 feet	3 feet

3. The required minimum clearance from the bottom of mat foundations and/or footings shall be 2 feet. Provide additional cover where necessary to satisfy the minimum clearance requirement.
4. Provide additional cover depth if necessary to avoid interference of other cables, ducts, piping, structures, and other utilities.

S. The Contractor shall adhere to this Additional Excavation Requirement for Appurtenances:

1. Ensure that excavations for valves and similar appurtenances shall be sufficient to leave at least 12 inches in the clear between the outer surfaces and the embankment or timber used to hold and protect the walls.

3.03 PROTECTION OF PERSONS AND PROPERTY

A. The Contractor shall do the following:

1. Barricade and post excavations with warning signs for the safety of persons. Provide warning lights during hours of darkness.
2. Protect structures, utilities, sidewalks, pavements, and other facilities immediately adjacent to excavations against damage including loading, settlement, lateral movement, undermining, and washout.

- B. Conduct topsoil removal operations to ensure the safety of persons and to prevent damage to existing structures and utilities, construction in progress, trees and vegetation to remain standing, and other property.

3.04 SHEETING AND BRACING

- A. Where sheeting and bracing are required to support the side walls of the excavation, the Contractor shall retain a Professional Engineer, registered in Florida, to design sheeting and bracing. The design shall establish requirements for sheeting and bracing and shall comply with all applicable codes; authorities having jurisdiction; and federal, state, and local regulations.
- B. The sole responsibility for the design, methods of installation, and adequacy of sheeting and bracing shall be and shall remain that of the Contractor and the Contractor's Professional Engineer. The Contractor shall provide all necessary sheeting and bracing or other procedures as required to ensure safe working conditions and to protect the excavations.
- C. Sheeting and bracing shall consist of braced steel sheet piling, trench box, braced wood lagging, and soldier beams or other approved methods.
- D. The Contractor shall immediately fill and compact voids formed outside the sheeting. Where soil cannot be properly compacted to fill the void, the Contractor shall use Class B concrete as backfill at no additional cost to the Owner.
- E. The Contractor shall install sheeting outside the required clearances and dimensions. Sheeting shall be plumb, securely braced, and tied in position. Sheeting shall be adequate to withstand all pressure to which it may be subjected. The Contractor shall correct any movement or bulging at no expense to the Owner so as to provide the necessary clearances and dimensions.
- F. The Contractor shall maintain sheeting and bracing in excavations and trenches for the entire time excavations will be open.
- G. The Contractor shall not brace sheeting against pipe being laid. Sheeting shall be braced so that no concentrated load of horizontal thrust is transmitted to the pipe.

3.05 DEWATERING, WATER REMOVAL, AND DRAINAGE MAINTENANCE

- A. Water shall not be permitted to accumulate in excavations. The Contractor shall provide dewatering systems to convey water away from excavations so that softening of foundations bottoms, footing undercutting, and soil changes detrimental to subgrade stability and foundation will not occur. Dewatering

systems and methods of disposal shall be approved by the Engineer before being installed by the Contractor. Groundwater levels shall be maintained a minimum of 1 foot below bottom of trenches or excavations.

- B. Dewatering systems and equipment shall be in place as required to eliminate water during the excavation period until the work is completed. The Contractor shall provide ample means and equipment with which to remove promptly and dispose of properly all water entering any excavation. This includes the use of sand or gravel as required to maintain adequate flow during the pipe laying or installation of other items of work within the excavation.
- C. Water pumped or drained shall be disposed of in a suitable manner without damage to adjacent property, to other work under construction, or to roads. Water shall not be discharged onto surface improvements without adequate protection of the surface at the point of discharge. All gutter, drains, culverts, sewers, and inlets shall be kept clean and open for surface drainage. Water shall not be directed across or over pavements except through approved pipes or properly constructed troughs. The Contractor shall obtain permission from the Owner of any property involved before constructing water courses or installing discharge pipe or hose for removal of water and provide for disposal of the water without ponding or creating a public nuisance.
- D. All pumps used for dewatering shall have noise-reduction features and shall be able to run continuously with minimal attendance. If required by the Owner or Engineer, the pumps shall be enclosed on all sides with a plywood enclosure, with padded material suitable for outdoor conditions on the inside of the enclosure, to further reduce pump engine noise to an acceptable level. All applicable ordinances and codes for noise abatement shall be followed. The Contractor shall maintain pumps at all times, as necessary. When pumps are no longer required, the Contractor shall remove the pumps, wellpoints, pipes, and other apparatus from the area.
- E. It is essential that the discharge of the trench dewatering pumps be conducted to natural drainage channels, drains, or storm sewers.
- F. Trenches shall be constructed on the upstream side of the traffic way across roadways, driveways, or other traffic ways adjacent to drainage ditches or water to prevent impounding water after the pipe has been laid. The Contractor shall construct and maintain bridges and other temporary structures required to maintain traffic across such unfilled trenches. Backfilling shall be done so that water will not accumulate in unfilled or partially filled trenches. After backfilling is completed, the Contractor shall immediately remove all material deposited in roadway ditches or other water courses crossed by the line of trench and restore

the original section, grades, and contours of ditches or water courses. Surface drainage shall not be obstructed longer than necessary.

- G. Where trenches are constructed in ditches or other water courses, backfill shall be protected from surface erosion. Where the grade of the ditch exceeds 1%, the Contractor shall install ditch checks. Unless otherwise indicated on the Contract Drawings, ditch checks shall be concrete or as otherwise approved by the Engineer. Ditch checks shall extend not less than 2 feet below the original ditch or water course bottom for the full bottom width and at least 18 inches into the side slopes and shall be at least 12 inches thick.

3.06 BACKFILLING AND COMPACTION

- A. The Contractor shall not backfill trenches until required tests are performed.
- B. Trenches improperly backfilled shall be reopened to the depth required for proper compaction, then refilled and compacted as specified, or the condition shall be otherwise corrected as directed.
- C. The Contractor shall perform the following steps to ensure compaction at the bottom of the trench or excavation before bedding:
 - 1. Remove disturbed native soil material and/or any soils not meeting the requirement of satisfactory soil material as indicated on the Contract Drawings.
 - 2. Compact the bottom of the trench excavation (undisturbed native subsurface soil) to no less than 95% of the Modified Proctor maximum dry density in accordance with ASTM D1557, before placement of foundation, bedding, piping, and backfill.
- D. To backfill below and around pipe to the spring line of the pipe, the Contractor shall do the following:
 - 1. Construct foundation and bedding as indicated on the Contract Drawings before placement of pipe.
 - 2. Install each pipe at proper grade, alignment, and final position.
 - 3. Deposit satisfactory soil material uniformly and simultaneously on each side of pipe in completed course layers to prevent lateral displacement.
 - 4. Compact under pipe haunches and on each side of pipe to the pipe spring line as shown on the Contract Drawings to hold the pipe in the proper position during subsequent pipe backfilling and compaction operations.
 - 5. Construct haunching as indicated on the Contract Drawings.

E. To trench backfill above pipe spring line to finished grade, the Contractor shall do the following:

1. Deposit satisfactory soil material around and above pipe in uniform layers as shown on the Contract Drawings.
2. Backfill and compact trenches from the spring line of the pipe to the top of the trench in completed course layers as shown on the Contract Drawings.
3. Use material previously defined in these Specifications as satisfactory soil material.
4. Compact by hand or mechanical tampers.

3.07 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. The Contractor shall remove and legally dispose of waste materials, including excavated material classified as unsatisfactory soil material, trash, and debris from the property at no additional cost to the Owner.

END OF SECTION

SECTION 02370
EROSION AND SEDIMENTATION CONTROL

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall take every reasonable precaution throughout construction to prevent the erosion of soil and the sedimentation of streams, storm systems, or other water impoundments, ground surfaces, or other property as required by federal, state, and local regulations.
- B. The Contractor shall provide protective covering for disturbed areas upon suspension or completion of land-disturbing activities. Permanent vegetation shall be established at the earliest practicable time. Temporary and permanent erosion-control measures shall be coordinated to ensure economical, effective, and continuous erosion and siltation control throughout the construction and post-construction period.

1.02 RELATED WORK (NOT USED)

1.03 SUBMITTALS

- A. The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

- A. Florida Department of Transportation (FDOT)
 - 1. FDOT Section 104—Prevention, Control, and Abatement of Erosion and Water Pollution.
 - 2. FDOT Section 982—Fertilizer.
 - 3. FDOT Section 985—Geotextile Fabrics.

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 TESTING REQUIREMENTS (NOT USED)

1.11 MAINTENANCE (NOT USED)

1.12 RECORD DRAWINGS (NOT USED)

1.13 REGULATORY REQUIREMENTS

- A. The Contractor shall prevent damage to properties outside the construction limits from siltation due to construction of the project and assume all responsibilities to the affected property owners for correction of damages that may occur. Erosion-control measures shall be performed conforming to the requirements of and in accordance with plans approved by applicable state and local agencies and as specified by the erosion-control portion shown on the Drawings and as required by these Specifications. The Contractor shall not allow mud and debris to accumulate in the streets or enter drainage ditches, canals, or waterways. Should the Contractor pump water from excavations during construction, appropriate siltation preventative measures shall be taken before the pumped water is discharged into any drainage ditch, canal, or waterway.

1.14 PRACTICES

The Contractor shall adhere to the following:

- A. Avoid dumping soil or sediment into any ditch or watercourse.
- B. Maintain an undisturbed vegetative buffer where possible between a natural watercourse and trenching and grading operations.

- C. Avoid equipment crossings of ditches where practicable.

1.15 EROSION AND SEDIMENT-CONTROL DEVICES AND FEATURES

- A. The Contractor shall construct all devices (silt fences, retention areas, etc.) for sediment control at the locations required to protect federal, state, and local water bodies and watercourses and drainage systems before beginning to excavate the site. All devices shall be properly maintained in place until a structure or paving makes the device unnecessary or until directed to permanently remove the device.
- B. The Contractor shall use mulch to temporarily stabilize areas subject to excessive erosion.
- C. Filter fabric, synthetic bales, or other approved methods shall be placed and secured over the grates of each existing inlet, grating, or storm pipe opening near the area of excavation to prevent silt and debris from entering the storm systems.
- D. The Contractor shall use silt fences, synthetic bales, and staked turbidity barriers as shown on the plans or as directed by the Owner or Owner's Representative to restrict movement of sediment from the site.
- E. The Contractor shall establish vegetative cover on all unpaved areas disturbed by the work.

PART 2 PRODUCTS

2.01 GENERAL

- A. Silt fence shall consist of non-biodegradable filter fabric (Trevira, Mirafi, etc.), in accordance with FDOT Section 985, wired to galvanized wire mesh fencing and supported by wood or metal posts.
- B. Staked turbidity barriers as specified in FDOT Section 985 and FDOT Standard Index 103.
- C. Erosion Stone: FDOT Section 530.
 - 1. Sand-Cement Riprap.
 - 2. Concrete Block.
 - 3. Rubble 20 to 300 pounds each.

- D. Filter Fabric for placing under Riprap shall meet the requirements of FDOT Section 985.
- E. Sediment barriers in accordance with FDOT Section 104.

PART 3 EXECUTION

3.01 CLEARING

- A. The Contractor shall schedule and perform clearing and grubbing so that subsequent grading operation and erosion-control practices can follow immediately after. Excavation, borrow, and embankment operations will be conducted as a continuous operation. All construction areas not otherwise protected shall be planted with permanent vegetative cover within 30 working days after completing active construction.

3.02 STABILIZING

- A. The angle for graded slopes and fills shall be no greater than the angle that can be retained by vegetative cover or other adequate erosion-control devices or structures. All disturbed areas outside of embankment left exposed will, within 30 working days of completion of any phase of grading, be sodded or otherwise provided with either temporary or permanent ground cover, devices, or structures sufficient to restrain erosion.

3.03 REGULATORY REQUIREMENTS

- A. Whenever land-disturbing activity is undertaken on a tract, a ground cover sufficient to restrain erosion must be sodded or otherwise provided within 30 working days on that portion of the tract upon which further active construction is to be undertaken.
- B. If any earthwork is to be suspended for any reason for longer than 30 calendar days, the areas involved shall be sodded with vegetative cover or otherwise protected against excessive erosion during the suspension period. Suspension of work in any area of operation does not relieve the Contractor of the responsibility to control erosion in that area.

3.04 VEGETATIVE COVER

- A. Disturbed areas shall be restored to an as good or better condition.

3.05 MAINTENANCE

- A. The Contractor shall maintain all temporary and permanent erosion-control measures in functioning order. Temporary structures shall be maintained until such time as vegetation is firmly established and grassed areas shall be maintained until completion of the project. Areas which fail to show a suitable stand of grass or which are damaged by erosion shall be immediately repaired. No additional payment will be made to the Contractor for re-establishing erosion-control devices, which may become damaged, destroyed, or otherwise rendered unsuitable for their intended function during the construction of the project.
- B. The Contractor shall remove all silt, sediment, and debris buildup regularly to maintain functioning storm systems and erosion-control devices.

3.06 REMOVAL OF SEDIMENT CONTROL DEVICES

- A. Near completion of the project, when directed by the Engineer, the Contractor shall dismantle and remove the temporary devices used for sediment control during construction. All erosion-control devices in grassed areas shall be left in place until the grass is established. The Contractor shall sod areas around devices and after removing or filling temporary control devices.
- B. The Contractor shall clean up all areas at the completion of the project.

END OF SECTION

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SECTION 02531
CONNECTIONS TO AND WORK ON THE EXISTING SYSTEM

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, and equipment required and maintain flow in existing water lines, construct and maintain all temporary connections and bypasses, and construct the permanent connections to the new system as shown on the Drawings and as directed by the Engineer.
- B. Should damage of any kind occur to the existing utilities, the Contractor shall, at his own expense and as part of the work under this Item, make repairs to the satisfaction of the Engineer.
- C. Notify the Engineer immediately of any discrepancies in elevations of existing pipes and structures between those shown on the Drawings and those established during construction so the Engineer can make the necessary modifications.
- D. All new pipe for connection shall conform to the following specifications:
 - 1. Section 15146, High-Density Polyethylene (HDPE) Pipe.
 - 2. Section 15148, Fusible Polyvinyl Chloride (FPVC) Water Mains and Appurtenances.
 - 3. Section 15155, Ductile Iron Fittings.
 - 4. Section 15291, Polyvinyl Chloride (PVC) Pressure Pipe and Fittings.

1.02 RELATED WORK

- A. Section 01740, Final Cleaning.
- B. Section 15125, Piping Appurtenances.

1.03 SUBMITTALS (NOT USED)

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 TESTING REQUIREMENTS (NOT USED)

1.11 MAINTENANCE (NOT USED)

1.12 RECORD DRAWINGS (NOT USED)

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 HANDLING WATER FLOWS

- A. The Contractor shall furnish all labor, equipment, and materials necessary to maintain existing flows.
- B. The use of overflow, bypass, pump, or any other means of conveying construction site drainage to any brook or other watercourse is not allowed.
- C. Submit to the Engineer and the Owner, for approval, a detailed written plan of procedures for flow maintenance 10 days in advance of potable water flow interruption.
- D. The Contractor shall make provisions to maintain water and sewer service connections during construction. Any damaged service connection shall be replaced from the main pipeline to a minimum of 3 feet beyond the point of damage.

3.02 PLUGGING AND ABANDONING FACILITIES

- A. In areas where pipes are removed, the abandoned point of connection shall be capped to the satisfaction of the Engineer.

- B. Where direct connections to existing pipes are abandoned, the connection must be plugged as shown on the Drawings.

END OF SECTION

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SECTION 02700 PAVING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section covers the work necessary to provide for the construction of all pavement where indicated on the Drawings.

1.02 RELATED WORK

- A. Section 01350, Environmental Protection Procedures.
- B. Section 02300, Earthwork for Structures.

1.03 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance:

- A. Limerock material submittal is to be made to include liquid limit, plastic index, gradation, certification regarding deleterious material, limerock bearing ratio (LBR), Florida Department of Transportation (FDOT) pit number, and other information as required to indicate performance in accordance with the specifications.
- B. Information regarding asphaltic and Portland cement concrete materials and mix shall be submitted as required by the referenced FDOT specifications.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time, unless otherwise noted. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

- A. The 2017 editions of the FDOT Standard Specifications for Road and Bridge Construction (Standard Specifications) and Roadway and Traffic Design

Standards shall be referred to for construction, workmanship, and quality control as specified with exceptions as noted in this Section.

1. Where the referenced FDOT Specifications cite "the Department," this shall be modified to "the Owner and/or Engineer" by this contract.
2. The Contractor shall retain an independent testing agency, as approved by the Engineer, to perform all tests, including tests referenced to be performed by the Engineer.
3. Payment for this project is on a Lump-Sum Basis if defined as Lump Sum on the Bid Form. The FDOT sections defining the Basis of Payment shall be applied only when unit price work is defined on the Bid Form.

B. American Society of Testing and Materials (ASTM)

1. ASTM D1556—Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
2. ASTM D1557—Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
3. ASTM D2167—Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
4. ASTM D6938—Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.06 QUALITY ASSURANCE

- A. The Contractor shall perform field-density tests along the centerline of construction or as directed by the Engineer and in accordance with the FDOT's *Standard Specifications for Road and Bridge Construction*, latest edition.
- B. The Contractor shall field check the depth of stabilization and/or limerock at each pipeline road crossing.
- C. The Engineer may require additional testing as deemed necessary. The Engineer shall interpret test results and the Contractor shall perform remedial work as directed by the Engineer. The Contractor shall provide labor to the Engineer for help in performing tests and/or checking line and grade at no additional cost to the Owner.
- D. Laboratory maximum dry density of soil mixtures at optimum moisture shall be determined by ASTM D1557 for subgrade, stabilized subgrade, and limerock base course.

- E. Field density of stabilized subgrade and soils or soil mixtures in fill or backfill shall be determined by ASTM D1556, D2167, or D6938 for limerock base course.
- F. Bearing value of stabilized subgrade shall be determined by the methods required for determining limerock bearing ratio (LBR) according to the FDOT, Standard Specification FM 5-515.
- G. Field density of stabilized subbase shall be 98% or greater of the Modified Proctor maximum dry density, ASTM D1557.
- H. The Contractor shall be responsible for scheduling and paying for all tests. The Engineer shall have sole responsibility for interpreting all test results. The Contractor shall bear the cost of all retests due to failure to achieve specified requirements.

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 TESTING REQUIREMENTS (NOT USED)

1.11 MAINTENANCE (NOT USED)

1.12 RECORD DRAWINGS (NOT USED)

PART 2 PRODUCTS

2.01 GENERAL (NOT USED)

2.02 ROCK BASE

A. The following sections of the Standard Specifications shall apply:

1. Section 200-1, Description.
2. Section 200-2, Materials.

2.03 STABILIZING MATERIALS

A. The following sections of the Standard Specifications shall apply:

1. Section 160-1, Description.
2. Section 160-2, Materials.

2.04 PRIME AND TACK COATS FOR BASE COURSES

A. The following sections of the Standard Specifications shall apply:

1. Section 300-1, Description.
2. Section 300-2, Materials.

2.05 ASPHALT

A. The following sections of the Standard Specifications shall apply:

1. Section 334-1, Description.
2. Section 334-2, Materials.
3. Section 334-3, General Composition of Mixture.
4. Section 334-5, Acceptance of the Mixture.

2.06 CEMENT CONCRETE PAVEMENT

A. The following sections of the Standard Specifications shall apply:

1. Section 350-1, Description.
2. Section 350-2, Materials.

2.07 TRAFFIC STRIPES AND MARKINGS

A. The following sections of the Standard Specifications shall apply:

1. Section 711-1, Description.
2. Section 711-2, Materials.

PART 3 EXECUTION

3.01 EXCAVATION AND EMBANKMENT

A. The following sections of the Standard Specifications shall apply:

1. Section 120-1, Description.
2. Section 120-2, Classifications of Excavation.
3. Section 120-3, Preliminary Soils Investigation.
4. Section 120-4, Removal of Unsuitable Materials and Existing Roads.
5. Section 120-5, Disposal of Surplus and Unsuitable Material.
6. Section 120-6.1, Materials for Borrow.
7. Section 120-7, Materials for Embankment.
8. Section 120-8, Embankment Construction.
9. Section 120-9, Compaction Requirements.
10. Section 120-10, Acceptance Program.
11. Section 120-11, Maintenance and Protection of Work.
12. Section 120-12, Construction.

B. Exceptions

1. Section 120-4.1, Subsoil Excavation: Unsuitable soils shall be those in Classifications A-6, A-7, or A-8 in the American Association of State Highway and Transportation Officials (AASHTO) System.
2. Section 120-4.2, Construction Over Existing Old Road: Where removal of existing pavement is called for, it shall be removed to the full depth as indicated in the cross-sections and replaced with new limerock and paving or other treatment in accordance with the Drawings and details.
3. Section 120-5.3, Disposal of Paving Materials: Disposing of muck on side slopes shall not apply.
4. Section 120-9.2.1, General: Laboratory maximum dry density shall be determined by Modified Proctor, ASTM D1557. Field densities shall be determined by ASTM D1556, D2167, or D6938. All embankments shall be compacted to not less than 95% of the maximum dry density, as determined by modified Proctor, ASTM D1557.
5. Section 120-12.1, Construction Tolerances: No tolerance greater than 0.1 foot above or below the plan cross-section will be allowed.

3.02 STABILIZING

- A. The following sections of the Standard Specifications shall apply:
 - 1. Section 160-3, Construction Methods.
 - 2. Section 160-4, Acceptance Program.
- B. Exceptions
 - 1. Section 160-2.4, Granular Subbase: Contractor may not substitute 6 inches of Granular Subbase for 12 inches of Stabilization unless such substitution is specifically indicated on the Drawings.
 - 2. Section 160-4.2.1.2, Undertolerance in Bearing Value Requirements: no undertolerance will be acceptable.

3.03 LIMEROCK BEARING RATIO AND DENSITIES

- A. Stabilized finish grade and stabilized shoulders shall have a minimum Limerock Bearing Ratio (LBR) value of 40.
- B. Field density of stabilized finished grade shall be a minimum of 98% of the Modified Proctor maximum dry density as specified in ASTM D1557 to a minimum depth of 12 inches as shown on the Drawings.

3.04 PRIME AND TACK COATS

- A. The following sections of the Standard Specifications shall apply:
 - 1. Section 300-3.1, Pressure Distributor.
 - 2. Section 300-3.2, Sampling Device.
 - 3. Section 300-3.3 Temperature Sensing Device.
 - 4. Section 300-5, Cleaning Base and Protection of Adjacent Work.
 - 5. Section 300-6, Weather Limitations.
 - 6. Section 300-7, Application of Prime Coat.
 - 7. Section 300-8, Application of Tack Coat.

3.05 ROCK BASE

- A. The following sections of the Standard Specifications shall apply:
 - 1. Section 200-3, Equipment.
 - 2. Section 200-4, Transporting Rock.
 - 3. Section 200-5, Spreading Rock.

4. Section 200-6, Compacting and Finishing Base.
5. Section 200-7, Acceptance Program.
6. Section 200-8, Priming and Maintaining.

B. Exceptions

1. Section 200-7.2.1, Density: The minimum density which will be acceptable for paved areas will be 98% of the maximum dry density as determined by Modified Proctor, ASTM D1557.
2. Section 200-7.3.1.2, Depth and Surface Testing Requirements: Thickness of base shall be measured at intervals not to exceed 200 feet.

3.06 ASPHALT

A. The following sections of the Standard Specifications shall apply:

1. Section 320-6, Preparation of the Mixture.
2. Section 320-7, Transportation of the Mixture.
3. Section 330-1, Description.
4. Section 330-2, Quality Control (QC) Requirements.
5. Section 330-3, Limitations of Operations.
6. Section 330-4, Surface Preparation.
7. Section 330-5, Paving Equipment.
8. Section 330-6, Placing Mixture.
9. Section 330-7, Compacting Mixture.
10. Section 330-8, Joints.
11. Section 330-9, Surface Requirements.
12. Section 330-10, Protection of Finished Surface.

3.07 CEMENT CONCRETE PAVEMENTS

A. The following sections of the Standard Specifications shall apply:

1. Section 350-3, Equipment.
2. Section 350-4, Subgrade Preparation.
3. Section 350-5, Setting Forms.
4. Section 350-6, Protection from Weather.
5. Section 350-7, Placement of Reinforcement.
6. Section 350-8, Placing Concrete.
7. Section 350-9, Striking-off, Consolidating, and Finishing Concrete.
8. Section 350-10, Final Finish.
9. Section 350-11, Curing.
10. Section 350-12, Joints.

11. Section 350-13, Surface Requirements.
12. Section 350-14, Thickness Determinations.

3.08 PAVEMENT REPAIR

- A. At his own expense the Contractor shall repair all damage to pavement as a result of work under this Contract in a manner satisfactory to the Engineer. Pavement shall be repaired to match the original surface material thickness and original grade. However, the asphalt concrete thickness shall not be less than 2 inches. The repair shall include preparing the subgrade, placing and compacting the applicable base, priming the limerock base, and placing and maintaining the surface treatment as specified in this Section.
- B. The width of all repairs shall be as shown on the Drawings, but shall extend at least 12 inches beyond the limit of the damage. The edge of the pavement to be left in place shall be cut to a true edge with a saw or other approved method so as to provide a clean edge to abut the repair. The line of the repair shall be reasonably uniform with no unnecessary irregularities.

3.09 JOINTS

- A. General pavement joints within asphalt or concrete driveways and roadways and where specified or directed by the Engineer, shall be mechanically sawed butt joints. The edges of asphalt pavement shall be trimmed to straight lines which a roller can follow or formed.

3.10 TRAFFIC STRIPES AND MARKINGS

- A. The following sections of the Standard Specifications shall apply:
 1. Section 711-3, Equipment.
 2. Section 711-4, Application.
 3. Section 711-5, Contractor's Responsibility for Notification.
 4. Section 711-6, Protection of Newly Applied Traffic Stripes and Markings.

END OF SECTION

SECTION 02740 DIRECTIONAL DRILLING

PART 1 GENERAL

1.01 SCOPE OF WORK

This Section includes furnishing all labor, materials, equipment, and incidentals necessary to complete each directional drill installation shown on the Drawings and as specified herein.

1.02 RELATED WORK

- A. Section 02305, Earthwork for Utilities.
- B. Section 02370, Erosion and Sedimentation Control.
- C. Section 15148, Fusible Polyvinylchloride (FPVC) Water Mains and Appurtenances.

1.03 SUBMITTALS

The following shall be submitted in sufficient detail to show full compliance with the specification:

- A. Qualifications: Submit statement of qualifications and records of previous similar jobs.
- B. Product Pipe: Submit manufacturer's catalog data for the product pipe as required in the pipe specifications. The product data shall also include the dimension ratio, minimum allowable bending radius, and the safe pull force for each product pipe being installed by directional drill.
- C. Drilling Fluids: Submit a complete list of all drilling fluids, additives, and mixtures to be used along with Material Safety Data Sheets.
- D. Software: Submit indication of the software that the Contractor will use to perform analyses in accordance with Article 1.06, Quality Assurance.
- E. Analyses: Submit software analyses results in accordance with Article 1.06, Quality Assurance.
- F. Contingency Plan: Submit a hydraulic fracture (frac-out) contingency plan in accordance with Article 1.06, Quality Assurance.

- G. Equipment: Submit a description of the rig(s) proposed for the project at each location, showing the method of control of the boring head, head type, pulling force of the equipment, age, reamer type(s), manufacturer type, and other germane information. This information shall demonstrate that the equipment pulling force is at least 1.25 the maximum calculated peak-pulling requirement.
- H. Certificates: Submit statement that Contractor has inspected the drill equipment including the drill rod and determined that they are in satisfactory condition for its intended use.
- I. Record Drawings: Submit an electronic copy and three hard copies of the record drawings within five days after completing the pull back in accordance with the Article 1.10, Record Drawings.
- J. Drilling Logs: Maintain and submit upon completion of work complete drilling logs of guided directional drill operations.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE

- A. The proposed product pipe installation lengths, depths, and curvatures presented on the Drawings are for bidding purposes only. The Contractor shall be solely responsible for the successful installation of each product pipe. The Contractor shall analyze each installation and make modifications necessary to successfully install each product pipe.
- B. The Contractor shall analyze each installation using BoreAid TM, DrillPath TM, or other approved software and perform hand calculations as necessary if Contractor's software is not capable performing all of the required analyses. The results of the analyses/calculations shall be submitted and shall include as a minimum the following:
 - 1. Proposed entry and exit angles.
 - 2. Proposed radii of curvature for all directional changes.
 - 3. Proposed profile and drill path. The profile shall show ground surfaces, waterway bottoms/beds (if applicable), and proposed product pipe installation.
 - 4. Product pipe deflection, buckling, external pressure, and stress calculations demonstrating that the forces/stresses exerted on the product pipe during and after installation will not exceed 80% of the manufacturer's safe limits.

5. Pull back force calculations demonstrating that peak pulling requirement does not exceed 80% of the manufacturer's safe pull pack force.
 6. Maximum borehole pressure calculations and demonstration that the maximum borehole pressure will not result in a hydraulic fracture (frac-out).
 7. Method of buoyancy control (if required/used) to reduce forces/stresses exerted on the product pipe to.
- C. The Contractor shall submit a frac-out contingency plan that describes frac-out planning, prevention, monitoring, response, notification to the Owner, Engineer, and regulatory agencies, and cleanup procedures.

1.07 WARRANTIES (NOT USED)

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Delivery, storage, and handling shall be in accordance with Section 01650, Delivery, Storage, and Handling and the additional requirements herein.
- B. Inspect materials delivered to the site for damage. All materials found during inspection or during the progress of work to have cracks, flaws, surface abrasions, or other defects shall be rejected and removed from the job site.
- C. Disposal of fluids is the responsibility of the Contractor. Disposal of fluids shall be done in a manner that is in compliance with all permits and applicable federal, state, and local regulations.

1.09 QUALIFICATIONS

- A. The Contractor's superintendent and driller assigned to this project must be experienced in work of this nature and must have successfully completed a minimum of five (5) similar projects of similar length, pipe type, pipe size, and soil type using directional drilling in the last three (3) years. Conventional open-trenching experience or bore-and-jacking experience will not be acceptable substitutes for directional drilling experience.
- B. As part of the bid submission, the Contractor shall submit documentation of such project(s). The documentation for experience shall include but not be limited to the following:
1. Name(s) and description(s) of project(s).
 2. Résumés of project manager, superintendent, and driller assigned to the specific project.

3. Pipe type(s), diameter(s), and lengths.
4. Type and manufacturer of equipment used.
5. Soil conditions encountered.
6. Start and completion dates.
7. Contact names, numbers, and addresses.

1.10 RECORD DRAWINGS

- A. The record drawings shall include a plan, profile, and all information recorded during the progress of the work. The Record Drawings shall be tied to the project's survey control.

1.11 DEFINITIONS

- A. *Horizontal Directional Drilling (HDD)*: A steer-able system for the underground installation of pipes, conduits, and cables using a surface launched rig. A pilot bore is drilled using a rotating drill string and then is enlarged by a back reamer to the size required for the product pipe. The necessary deviation during pilot boring is provided by a slanted face to the drill head, an asymmetric drill head, eccentric fluid jets, or a combination of these, usually in conjunction with an aboveground electronic locator or a remote guidance system.
- B. *Maxi (Conventional) HDD*: Typically used for the largest-diameter pipelines/conduits and longest length installations. Pipe diameters are typically 18 inches or larger, lengths can exceed 1,000 feet, and the pullback force is typically in excess of 70,000 pounds. The drill string is usually remote-tracked provided from sensors near the leading end of the drill string.
- C. *Mini HDD*: Typically used for the smaller diameter pipelines/conduits and for shorter distances. Pipe diameters are typically 6 inches or smaller, lengths are less than 600 feet, and pullback forces are up to 20,000 pounds. The drill string is typically tracked with a surface held walkover transmitter/receiver.
- D. *Midi HDD*: Typically used for intermediate sizes and lengths of pipelines/conduits. Pipelines are typically between 6 inches and 18 inches diameter, lengths are up to 1,000 feet, and pullback forces from 20,000 to 70,000 pounds. Midi HDD equipment may employ similar capabilities to the Maxi HDD rigs but have more limitations on capacity. The drill string is typically tracked with a surface-held walkover transmitter/receiver.

PART 2 PRODUCTS

2.01 EQUIPMENT

- A. Boring equipment shall be matched to the conditions of the project and shall have a pulling force at least 1.25 the maximum calculated peak-pulling requirement for each installation given the site specific conditions.
- B. Boring equipment shall have a mechanical drilling rig with a controlled directional boring head using either a fluid or mechanical cutting head (or combination of both), assisted and cooled by an approved drilling fluid of low pressure and volume.
- C. Approved boring equipment shall be that manufactured by American Augers, Case Construction, Charles Machine Works (Ditch Witch), Straight Line, Tulsa Rig Iron, Vermeer, or approved equal.
- D. The location/tracking system employed for determining the location of the drilling head during the pilot bore shall include but not be limited to the position of the boring head, the roll angle, the tilt angle, depth below grade, temperature of data transmitter, and remaining battery life.
- E. The Contractor shall select the appropriate drill equipment, which at least meets the minimum requirements established in this specification, to be used for this project.
- F. The drill equipment including rod shall be inspected and approved for use by the Contractor prior to arrival at the work site.

2.02 DRILLING FLUIDS

- A. A high-quality drilling fluid shall be used to ensure hole stability, cuttings transport, bit and electronics cooling, and hole lubrication to reduce drag on the drill pipe and the product pipe. Composition of the fluid must comply with all federal, state, and local environmental regulations.
- B. The drilling fluid shall be a bentonite slurry mixed with potable or reclaimed water (of proper pH) to ensure no contamination is introduced into the soil during the drilling, reaming, or pipe installation process. Contractor is responsible for any required pH adjustments. A polymer-based slurry will be considered only if the Contractor demonstrates that a bentonite slurry will not be suitable for this project and the proposed polymer slurry is acceptable to the Florida Department of Environmental Protection. Drilling fluids that are petroleum-based or that

contain additives that may contaminate the surrounding soils or groundwater shall not be allowed.

- C. The type of proposed drilling fluid with a complete listing of all additives along with Material Safety Data Sheets shall be submitted for approval before work begins.
- D. Potable water or reclaimed water will be made available to the Contractor. This water will be metered and invoiced to the Contractor at the current effective rate.

2.03 PRODUCT PIPE

- A. The nominal diameter and material type of each product pipe shall be as shown on the Drawings.
- B. Fusible polyvinylchloride pipe (FPVC) shall conform to the requirements of Section 15148, Fusible Polyvinylchloride Water Mains and Appurtenances. The maximum dimension ratio (i.e., the thinnest allowable wall thickness) for FPVC pipe being installed by direction drill shall be 18 (DR18).

PART 3 EXECUTION

3.01 GENERAL

- A. No work or drilling shall commence until the Contractor has submitted the required information and received written approval from the Engineer regarding the drill path and related procedures.
- B. The Contractor shall locate all utilities, structures, etc. within the construction area before any work begins and before equipment is mobilized.
- C. Before drilling operations begin, all erosion control devices and dewatering shall be in-place and functional in accordance with Section 02370, Erosion and Sedimentation Control.
- D. The boring rig shall be sufficiently and adequately anchored for the task.
- E. Directional drilling equipment machine safety requirements shall include common grounding system to prevent electrical shock in the event of underground electrical cable strike. The grounding system shall connect all pieces of interconnecting machinery; the drill, mud mixing system, drill power unit, drill rod trailer, operator's booth, worker grounding mats, and any other interconnected equipment to a common ground. The drill shall be equipped with an "electrical

strike" audible and visual warning system that will notify the system operators of an electrical strike.

- F. The Contractor shall conform to all requirements of Section 02305, Earthwork for Utilities, including, but not limited to, excavation, protection of persons and property, sheeting and shoring, backfill and compaction, and disposal of excess and waste materials.
- G. The Contractor shall be responsible for transporting, containing, and storing any water required for the drilling operations, cleanup, and other needs.
- H. All drilling fluid excess shall be contained in entry and/or exit pits and pumped/treated/stored as needed to preclude spills and escape to the surrounding environment. Ensure that entry and exit pits are of sufficient size and volume to contain the expected return of drilling fluids and cuttings.
- I. Drilling fluid returns can be collected in the entrance pit, exit pit, or spoils recovery pit. The Contractor shall immediately clean up any drilling fluid spills or overflows from these pits.
- J. Disposal of the drilling fluids shall be the responsibility of the Contractor and shall be conducted in compliance with all relative environmental regulations, right-of-way and work space agreements, and permit requirements.
- K. The product pipe shall be installed within the limits indicated on the Drawings.

3.02 DRILL SET-UP AND PITS

- A. The Contractor may use the set-up areas identified on the Drawings. If additional areas are required, the Contractor shall be responsible for coordinating the additional areas at no additional cost to the Owner.
- B. Drill entrance and exit pits are required. The Contractor shall be responsible for design and construction of the drill entrance and exit pits.
- C. The drill entrance and exit pits shall be maintained at minimum size to allow only the minimum amount of drilling fluid storage prior to transfer to mud recycling or processing system or removal from the site.
- D. Drilling mud shall not be allowed to flow freely on the site or around the entrance or exit pits. Erosion and sediment control devices shall be set up around each pit. Mud spilled shall be removed as soon as possible and the ground restored to original condition. Pits shall be shored to OSHA standards and the requirement of Section 02305, Earthwork for Utilities.

3.03 DRILL ENTRANCE AND EXIT ANGLE

- A. The entrance and exit angles shall such that the elevation profile maintains adequate cover to reduce risk of frac-out and that ground exit occurs as specified herein. Contractor shall be responsible for ensuring that entrance and exit angles ensure pullback forces do not over stress the pipe.
- B. In no case shall the entry or exit angles of the installed pipeline shall be less than 8 degrees from the horizontal and or more than 18 degrees from the horizontal.
- C. In addition to the allowable limits of Article 3.04 B the entry and exit angles shall in accordance with those used in the analyses performed in Article 1.06, Quality Assurance.

3.04 PILOT HOLE

- A. A pilot hole shall be drilled for all product pipe installations 6-inch-diameter and larger.
- B. The type and size of the pilot string cutting head and the diameter of the drill rod shall be selected by the Contractor for each specific application.
- C. The cutting head shall be assisted by and cooled by drilling fluid of low pressure and volume.
- D. The pilot hole shall be drilled along the approved path. Pilot hole tolerances are as follows:
 - 1. Vertical tolerance: Provide cover in accordance with the approved profile developed under Article 1.06, Quality Assurance.
 - 2. Horizontal tolerance: 3 feet from the centerline of the product pipe.
 - 3. Curve Radius: No curve will be accepted with a radius less than 1.25 times the manufacturer's recommended minimum bending radius for the product pipe being installed by directional drill. NOTE: There are additional stresses imposed on the product pipe due to pulling it around curves versus bending the product pipe in a trench. The minimum bending radius for a product pipe installed by direction drill is greater than the minimum bending radius for the same product pipe installed in a trench.
 - 4. Entry Point Location: The pilot hole entry point shall be established by the Contractor.
 - 5. Exit Point Location: The exit point location shall be established by the Contractor.

- 6. The installed pipeline cover requirements as shown on the drawings and as specified herein shall not be violated.
- E. If significant differing soils or strata from those provided in the geotechnical data and reports are encountered during the pilot boring, the Contractor shall be responsible for changing the drill head and slurry and other means as may be appropriate to complete the bore.
- F. The Contractor shall adjust the viscosity of the drilling fluid to match the conditions of the project. The Owner shall bear no responsibility for loss of drilling fluid or loss of drilling equipment if an obstacle or unknown condition is encountered during the work.
- G. The Owner shall not be responsible for underground obstacles (such as boulders, tree stumps, loose and unconsolidated soils, hard rock, or utilities) or structures that may be encountered during the work.
- H. If hydraulic fracture occurs, the Contractor shall implement the approved frac-out contingency plan and repair all related damages, cleanup of fluids, and make corrections to preclude future events. Such corrections may include but not be limited to re-profiling the bore or changing the viscosity of the drilling fluid or plugging the fracture or a combination of these. If the borehole is abandoned and an alternate route is chosen, the abandoned borehole shall be filled with excavatable flowable fill.
- I. Where construction activities are close to or under water bodies (lakes, creeks, canals, retention basins) or wetlands, special attention shall be given to the proposed profile to ensure that hydraulic fracture does not occur under the water feature. Additionally, silt fences and similar approved erosion control devices shall be used to protect the water body(s) from the construction activities.

3.05 BACK-REAMING

- A. Back-reaming shall be required for all product pipe installation 6-inch-diameter and larger.
- B. The type of back-reamer to be utilized shall be determined by the type of subsurface soil conditions that are encountered during the pilot hole drilling operation. The back-reamer type shall be selected by the Contractor for each specific application.
- C. Back-reaming shall be conducted in single or multiple passes of the borehole and shall enlarge the borehole to at least 1.4 times the outer diameter of the product pipe to be installed. Larger reaming may be required depending on subsurface

conditions encountered. The number of back-reaming passes and the borehole size, provided the minimum requirements are met, shall be the Contractor discretion.

3.06 PULL BACK

- A. Unless approved otherwise, the entire product pipeline to be installed via directional drill shall be fully assembled prior to commencement of pull back operations.
- B. The product pipeline shall be supported during pullback operations in a manner to enable it to move freely and prevent damage. Properly spaced rollers and at proper heights shall be used to transition the product pipe from the horizontal to oblique positions for insertion into the borehole.
- C. Unless approved otherwise, the product pipeline shall be installed in one continuous pull.
- D. The product pipe shall be installed with a continuous #12 gauge tracer wire of sufficient type to remain intact and usable upon completion of the installed product pipe.
- E. Torsional stress shall be minimized by using a swivel to connect the pull section to the reaming assembly.
- F. Maximum allowable tensile force imposed on the pull section shall not exceed 80% of the pipe manufacturer's safe pull (or tensile) strength. If the pull section is made up of multiple pipe size or materials, the lowest safe pull strength value shall govern and the maximum allowable tensile force shall not exceed 80% of this value.
- G. External pressure shall be minimized during installation of the pullback section in the reamed hole. Damaged pipe resulting from external pressure shall be replaced at no cost to the Owner. Buoyancy modification shall be at the discretion of the Contractor.
- H. The Contractor shall take precautions to protect the product pipeline from damage and marring during the installation and pullback operation. Such precautions shall include but not be limited to using rollers, pulleys, idlers, and trunnions.
- I. After pullback is completed, the Contractor shall "rest" the product pipeline to allow for any contraction and shrinkage for at least 24 hours. No additional work on the pulled product pipeline shall be allowed during the resting period.

3.07 GUIDANCE SYSTEMS

- A. Walkover guidance systems are acceptable for this project. A magnetic survey tool located behind the pilot string cutting head shall also be used for this project.

3.08 DOCUMENTATION

- A. The Contractor shall maintain drilling logs that accurately provide drill bit location (both horizontally and vertically) at least every 10 feet along the drill path. In addition, logs shall be kept that record, as a minimum, the following every 15 minutes throughout each drill pass, back-reaming pass, or product pipe installation pass:
 - 1. Drilling fluid pressure
 - 2. Drilling fluid flow rate
 - 3. Drilling fluid temperature
 - 4. Drill thrust force
 - 5. Drill pullback force
 - 6. Drill head torque
- B. Each day, the Contractor shall also record the total amount of drilling mud used and viscosity of the drilling mud. If the viscosity of the drilling mud is changed, the Contractor shall record the new viscosity and the time the mud viscosity was changed.
- C. Samples of each log sheet shall be submitted to the Owner/Engineer for approval before work begins.
- D. The Engineer shall have access to instrumentation, readings, and logs at all times during operation.
- E. After the pull is completed, the Contractor shall provide record drawing information of the installed product pipeline. The record drawing information shall provide the horizontal and vertical location of the product pipeline tied to the project control datum. At a minimum, the entry and exit locations, angles, and elevations shall be recorded and the locations and depths of the product pipeline shall be recorded at intervals along the entire length of the profile. For profiles under non-submerged surfaces, the interval shall be 10-foot. For profiles under submerged surfaces (such as a lake, stream, canal, or river), the interval shall be 20 feet. This information shall be provided to the Owner/Engineer within 7 calendar days after the completion of each bore path.

3.09 MAINTENANCE OF TRAFFIC

- A. During assembly and pullback of the pipe, the pipe must be laid out in such a way to minimize disrupting and interfering with vehicular and pedestrian traffic or other operational conflicts that the Owner/Engineer identify.
- B. The Contractor shall be responsible for safe maintenance of pedestrian and vehicular of traffic. If the construction activities require such action, a maintenance-of-traffic plan shall be submitted to the Owner/Engineer for approval before work begins. The plan shall be in accordance with Florida Department of Transportation Standard Index 600 Series and Technical Specifications.

3.10 UTILITY LOCATES

- A. Contractor shall locate all utilities prior to start of excavation or drilling. The Contractor shall be responsible for damage to utilities and shall repair damaged utilities at no cost to the Owner.

3.11 CLEANUP

- A. Immediately upon completion of work of this Section, all rubbish and debris shall be removed from the job site. All construction equipment and implements of service shall be removed and the entire area involved shall be left in a neat condition acceptable to the Engineer.
- B. "Blow holes" or "breakouts" of drilling fluid to the surface shall be cleaned up immediately and the surface area returned to its original condition. All drilling fluids, spoils, and separated materials shall be disposed of in compliance with federal, state, and local environmental regulations.
- C. After the product pipe installation is completed, the Contractor shall restore the pits and drill rig anchors and work areas to their pre-construction or better condition. Seeding shall not be allowed in lieu of sod unless granted in writing by the Owner/Engineer.

END OF SECTION

SECTION 02750
ASBESTOS CEMENT MAIN ABANDONMENT AND DISPOSAL

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Work in this Section includes all labor, material, equipment, testing, tax, overhead, and profit necessary to install, construct, and place into service the items described in this Section to provide a complete and functional system ready for use by the City.
- B. If it is necessary to remove any abandoned Asbestos Cement (AC) pipe and/or appurtenances to accommodate improvements, the AC main(s) and/or appurtenances shall be removed if requested by the City and disposed of in accordance with this entire standard.
- C. Cutting and disposal of asbestos cement pipe (transite pipe) must be performed by a Florida-licensed Asbestos Abatement Contractor. Use of compressed air to clean transite pipes is prohibited. At no time should transite pipe or pieces be mixed in with fill.
- D. Contractor must furnish all permits, labor, material, services, insurance, tools, equipment, and notifications in accordance with EPA, OSHA, State, and all other applicable agencies to handle and remove asbestos material. Specifically, refer to EPA 40 CFR Part 61.
- E. All work involved in the removal, salvage or disposal of AC mains shall be the responsibility and at the expense of the Contractor.
- F. All scrap AC shall be properly manifested and prepared for transport. The scrap material shall be delivered to a landfill permitted for disposal of non-friable asbestos containing materials.
- G. Friable asbestos-containing materials are regulated as hazardous waste. A friable material is defined as material that can be crumbled, pulverized, or reduced to

powder in the hand. AC water main piping is generally considered to be a non-friable material.

1. The Sarasota County Landfill will accept friable and non-friable asbestos-containing material under the following conditions:
 - a. Friable Asbestos (any asbestos-containing materials that, when dry, may be crumbled, pulverized or reduced to powder by hand pressure).
 - (1) Asbestos must be sprayed with water until wet, then double bagged, tied off, labeled and placed in a covered container.
 - b. Non-friable Asbestos (any asbestos-containing materials that remain solid when handled):
 - (1) Asbestos must be sprayed with water until wet, and then placed in a covered container. Transite pipe shall be kept wet during all phases of removal. No visible emissions are permitted.
 - (2) No asbestos will be accepted after 3 p.m. Monday-Friday, on Saturday or on holidays.
 - (3) Haulers must have the proper manifests and call 24 hours in advance.
2. At least 10 working days before actual removal, the Contractor or his designated subcontractor will complete a National Emission Standards for Hazardous Air Pollutants (NESHAP) "Notice of Renovation or Demolition" form. The contractor or his asbestos subcontractor will deliver these completed forms by hand or certified mail to the following agencies (facsimiles are not permitted). Haulers must submit a completed Waste Shipment Record to the following locations:

DEPARTMENT OF ENVIRONMENTAL
PROTECTION

Division of Air Resources Management
2600 Blair Stone Road
Tallahassee, FL 32399-2400

SARASOTA COUNTY AIR AND WATER
QUALITY

North County Air and Water Quality
Protection 1001 Sarasota Center Blvd.
Sarasota, FL 34232
941-861-5000

OR

Central County Solid Waste Disposal
Facility Administration Office 4000
Knights Trail Road
Nokomis, FL 34275
941-861-5000

3. Method of payment: Cash, Visa, MasterCard and Discover or a Debit Card with a bank logo on it. They do not accept business or personal checks.
 4. Important notice: If asbestos is being deposited in the Sarasota County Central County Solid Waste Disposal Complex (county landfill), a Waste Shipment Record (WSR) must accompany the load. Submit a copy of the WSR signed by the approved disposal facility to the Engineer within 35 days of shipment.
- H. All loads may be subject to inspection by County personnel prior to admittance to the landfill. Label each container with the name of the City and location at which the waste was generated. Transfer pipe directly from the trench into the lined container.
- I. Label trucks used to transport asbestos-containing waste material during loading and unloading as follows (refer to 29 CFR 1910.145 (d)(4) for sign format).

DANGER ASBESTOS DUST
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 02920 SODDING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall provide all materials, equipment, labor, and work to construct the project in accordance with the Contract Documents. No time extensions shall be given to the Contractor for not establishing a sod cover during the "proper" planting season.
- B. This work includes but is not limited to the following items specified in this Section:
 - 1. Placing sod to provide grass as finished ground cover at all unpaved disturbed areas of the site.

1.02 RELATED WORK

- A. The General and Supplementary Conditions of these Specifications are made a part of this Section as if incorporated in this Section.

1.03 SUBMITTALS

- A. The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

- A. Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction, 2017:
 - 1. FDOT Section 162—Prepared Soil Layer.
 - 2. FDOT Section 570—Performance Turf.
 - 3. FDOT Section 575—Sodding.

4. FDOT Section 981—Turf Materials.
5. FDOT Section 982—Fertilizer.
6. FDOT Section 983—Water for Grassing.

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.
- B. Deliver, store, protect, and handle products to the site to prevent damage from wetness and weather conditions.
- C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of the manufacturer.

1.09 QUALIFICATIONS (NOT USED)

1.10 TESTING REQUIREMENTS (NOT USED)

1.11 MAINTENANCE

- A. Maintenance shall be as indicated under Part 3, Execution, of this Specification Section.

1.12 RECORD DRAWINGS (NOT USED)

1.13 DEFINITIONS

- A. *Weeds:* Weeds include but are not limited to Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.14 REGULATORY REQUIREMENTS

- A. The Contractor shall comply with state and local regulatory agencies for fertilizer and herbicide composition.

PART 2 PRODUCTS

2.01 GENERAL (NOT USED)

2.02 MATERIALS

A. Topsoil

- 1. Top soil shall be supplied and installed in accordance with FDOT Standard Section 162.

B. Fertilizer

- 1. Fertilizer shall be a complete, commercial-grade mixture of 12-8-8 analysis.
- 2. Fertilizer shall conform to applicable state and local laws for the material used.
- 3. Commercial-grade mixture shall conform to FDOT Standards, Section 982.

C. Mulch

- 1. Mulch shall conform to FDOT Standards, Section 981.
- 2. Mulch shall be dry grain straw or hay, free of noxious weeds.
- 3. Mulch shall be thoroughly cured and dried before use.
- 4. Forest litter, pine needles, or Spanish Moss will not be acceptable.

D. Sod

- 1. Sod shall conform to FDOT Standards Section 981. A thick stand of grass shall be provided at all locations.
- 2. Sod shall be Argentine Bahia.
- 3. Sod planted on private properties shall match the existing sod.

E. Water

- 1. The water used to produce grass may be obtained from any approved source, in accordance with FDOT Section 983. The water shall be free of excess and harmful chemicals, acids, alkalies, and all substances which

may be harmful to plant growth or obnoxious to traffic. Salt or brackish water shall not be used. The Contractor shall make arrangements to secure and pay for water. The Contractor shall make all provisions necessary to water until a thick stand of grass is established.

PART 3 EXECUTION

3.01 SURFACE PREPARATION

- A. The entire area to be sodded required in this Section shall be covered with a 4-inch layer of muck or suitable topsoil, carefully spread and disked lightly into the existing soil and finished to the grades indicated.

3.02 FERTILIZING

- A. Fertilizer shall be applied uniformly on the surface of the ground at a minimum rate as specified in Section 570 of FDOT Specifications. It shall be mixed into the soil with a disk harrow, where practicable, or by hand-raking in areas of limited accessibility. Mixing shall be continued until the fertilizer is uniformly incorporated into the top 3 inches of soil.

3.03 MULCHING

- A. After spreading and mixing the fertilizer, the Contractor shall apply approximately 2 inches, loose thickness, of the mulch material uniformly over the grassing area and cut into the soil to produce a loose mulch thickness of 3 to 4 inches, in accordance with Section 570 of FDOT Specifications. Care shall be exercised to prevent the mulch from being cut too deeply into the soil.

3.04 SEEDING (NOT USED)

3.05 SODDING

- A. Application shall be in accordance with FDOT Standards, Section 575.

3.06 WEED CONTROL

- A. The Contractor shall apply herbicides as required and as recommended by the County Agricultural Agent. Herbicides shall only be applied as needed.

3.07 EQUIPMENT

- A. All equipment used in the operation of grassing shall be adequate to produce the required results. Equipment for placing mulch material into the soil shall be

suitable for cutting the specified materials uniformly into the soil and to the required controlled depth. Any damage to existing private lawns and/or irrigation systems shall be repaired by the Contractor to the homeowner's satisfaction. Rollers shall have corrugated or notched surfaces and shall be at least 12 inches in diameter. Smooth surface rollers will not be permitted.

3.08 GROUND COVER DATA (NOT USED)

3.09 GROUND COVER ESTABLISHMENT

A. General Requirements

1. The Contractor shall provide ground cover (sod) establishment of the specified permanent vegetation before final acceptance of the project with no dead areas of ground cover. Groundcover (sod) establishment shall consist of necessary preserving and protecting to keep the grassed areas in a satisfactory condition. The Contractor shall water the grassed areas as long and as often as necessary to promote maximum practicable growth. At any time the Engineer may require replanting an area or portion of an area which, for any cause, shows unsatisfactory growth. Except as otherwise specified or permitted by the Engineer, the Contractor shall prepare areas to be replanted in accordance with the requirements of the Specifications as if such replanting were the initial planting. However, the type of fertilizer and the applicable rate of fertilizer to be furnished and applied by the Contractor as part of plant establishment occasioned by replanting shall be determined by soil tests or otherwise established.

B. Growth and Coverage

1. The Contractor shall be responsible for providing satisfactory growth and coverage as defined below. Growth and coverage shall be considered acceptable when all areas show a satisfactory visible growth with no bare spots larger than 1 square foot. Bare spots shall be scattered and the total bare areas should not comprise more than 1/100 of any given area.

3.10 EXTENT OF SOD MAINTENANCE

- A. The Contractor is responsible for all sod maintenance until the date of final completion of the project. Sod maintenance includes cutting, watering, fertilizing, and re-sodding as required to maintain the required coverage of healthy, vibrant sod cover.

END OF SECTION

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SECTION 02955
PIPELINE ABANDONMENT GROUTING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section includes requirements for materials, proportioning, mixing, transporting, placing, and testing of backfill grout used for placing piping out of service as indicated in the Contract Documents.
- B. Definitions
 - 1. *Backfill Grout* means low-shrink un-reinforced mortar designed to completely fill the pipelines as shown on the Plans. The backfill grout shall be formulated with approved constituents, including cement, fine aggregate, pozzolans, and admixtures.

1.02 RELATED WORK (NOT USED)

1.03 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance:

- A. Method of Construction: The Contractor shall prepare a written comprehensive backfill grouting work plan and submit it to the Engineer for review 60 days before start of work. The work plan shall include the following:
 - 1. Proposed backfill grout mix design, including sources of materials and results of tests as specified in this Section.
 - 2. Batching, mixing, and pumping operations. For on-site concrete batch plant, if erected within a staging area, include documentation concerning agreement with the Engineer.
 - 3. Rates of pumping, backfill grouting sequence, and injection pressures.
 - 4. Method of handling and transporting backfill grout from the surface delivery point to the final placement into forms, including details of drop pipes, agitator, and pumping equipment.
 - 5. Quality Control Plan for monitoring the grouting operations and quality of backfill grout.
 - 6. Method(s) to be used for bulkheading.
 - 7. Method for transporting and disposing of rejected or waste backfill grout.

- B. Working Drawings: Working drawings for placing backfill grout, including sequence of backfill grout placement, details of bulkheads, design calculations, installation methods, bracing, support to carry live construction loads, and method of removing rails if rails are used.
- C. Catalog Data: Catalog data for backfill grouting equipment, including batching, mixing, and pumping operations, mixers, agitators, and admixtures, including product information and performance records of materials used for similar applications.
- D. Certified test reports on grout mix design, including proposed sources of cement, aggregate and admixtures, and qualification records.
- E. Certificate of Compliance for each shipment of materials for the following items:
 - 1. Admixtures (grout fluidifier, high-range water reducer, and foaming agent).
 - 2. Total chlorides in aggregate, admixture, and water mixture.
 - 3. Cement.
- F. Results of field quality control tests on aggregate, mixing water and grout, and inspection reports.
- G. Weekly records of backfill grouting for review by the Engineer.
- H. Qualifications.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

- A. American Association of State Highway and Transportation Officials (AASHTO)
 - 1. AASHTO T 26— Standard Method of Test for Quality of Water to Be Used in Concrete.

- B. American Concrete Institute (ACI)
 - 1. ACI 304—Measuring, Mixing, Transporting, and Placing Concrete.
 - 2. ACI 311—Concrete Inspection.
- C. American National Standards Institute (ANSI)
 - 1. ANSI/ASME B40.100-2005—Pressure Gauges and Gauge Attachment.
- D. American Society for Testing and Materials (ASTM)
 - 1. ASTM C31—Standard Practice for Making and Curing Concrete Test Specimens in the Field.
 - 2. ASTM C33—Standard Specification for Concrete Aggregates.
 - 3. ASTM C94—Standard Specification for Ready-Mixed Concrete.
 - 4. ASTM C128—Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate.
 - 5. ASTM C136—Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - 6. ASTM C138—Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.
 - 7. ASTM C143—Standard Test Method for Slump of Hydraulic-Cement Concrete.
 - 8. ASTM C150—Standard Specification for Portland Cement.
 - 9. ASTM C157—Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete.
 - 10. ASTM C172—Standard Practice for Sampling Freshly Mixed Concrete.
 - 11. ASTM C260—Standard Specification for Air-Entraining Admixtures for Concrete.
 - 12. ASTM C403—Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance.
 - 13. ASTM C494—Standard Specification for Chemical Admixtures for Concrete.
 - 14. ASTM C566—Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying.
 - 15. ASTM C827—Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures.
 - 16. ASTM C937—Standard Specification for Grout Fluidifier for Preplaced-Aggregate Concrete.
 - 17. ASTM C938—Standard Practice for Proportioning Grout Mixtures for Preplaced-Aggregate Concrete.
 - 18. ASTM C939—Standard Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method).

19. ASTM C940—Standard Test Method for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory.
20. ASTM C942—Standard Test Method for Compressive Strength of Grouts for Preplaced-Aggregate Concrete in the Laboratory.
21. ASTM C945—Standard Practice for Design Considerations and Spray Application of a Rigid Cellular Polyurethane Insulation System on Outdoor Service Vessels.
22. ASTM C953—Standard Test Method for Time of Setting of Grouts for Preplaced-Aggregate Concrete in the Laboratory.
23. ASTM C1064—Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
24. ASTM D512—Standard Test Methods for Chloride Ion In Water.
25. ASTM E70—Standard Test Method for pH of Aqueous Solutions With the Glass Electrode.

1.06 QUALITY ASSURANCE

- A. Laboratory Requirements: The Contractor shall engage an approved testing laboratory to design the mix proportions for backfill grout, to perform in-process quality control tests, and to monitor the batching and mixing of backfill grout daily.
- B. Qualifications: The Contractor shall demonstrate successful experience in placing backfill grout on at least two projects requiring similar materials, production rates, and pumping distances.
- C. Pre-installation Conference: Not less than 30 days before placing backfill grout, the Contractor shall hold a pre-placement meeting with the Engineer to review all details of the backfill grout mix proportions, placing equipment, placement procedures and sequence, and testing and inspection requirements. Before the pre-placement meeting, the submittal requirements for the grout mix proportions specified in this TSP shall be completed.
- D. Field Requirements: The Contractor shall perform all field quality-control testing and inspection in accordance with ACI 311.
- E. The Contractor shall furnish one set of calibrated pressure gauges to be used as a master for checking pressure gauges in the field. The Contractor shall also provide fittings for connecting calibrated pressure gauges parallel to the field gauges suitable for periodic checking.

1.07 WARRANTIES (NOT USED)

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS

- A. The Contractor and the field supervisor assigned to this project must be experienced in placing backfill grout and shall have successfully completed a minimum of three similar projects requiring similar materials, production rates, and pumping distances. The Contractor shall submit a description of such project(s) which shall include, at a minimum, a listing of the location(s), date of project(s), and Owner's reference name(s) and telephone numbers, as well as other information relevant to the successful completion of the project.

1.10 TESTING REQUIREMENTS (NOT USED)

1.11 MAINTENANCE (NOT USED)

1.12 RECORD DRAWINGS (NOT USED)

PART 2 MATERIALS

2.01 CEMENT

- A. Cement shall meet requirements of ASTM C150, Type II, including optional requirements for false-set and low alkali. The Engineer may waive the low alkali limit for the Portland cement provided the Contractor selects aggregates that are not potentially reactive with the cement.

2.02 AGGREGATE

- A. Fine aggregate shall meet requirements of ASTM C33. Fine aggregate shall be washed natural sand, and it shall not contain any materials that are deleteriously reactive with the alkalis in the cement.

2.03 ADMIXTURES

- A. Air-entraining admixtures shall meet requirements of ASTM C260.
- B. The grout fluidifier shall meet requirements of ASTM C937.

- C. The high-range water-reducing (Superplasticizing) admixture shall conform to Type F or G, ASTM C494. The dosage rate of the superplasticizing admixture shall be established from laboratory tests to demonstrate that grout with a flowable consistency (30-sec efflux time in accordance with ASTM C939) can be maintained for at least 30 minutes after adding water to the proposed mix and provided that bleeding and retardation to the mixture occurs. The Contractor shall submit results of these tests for approval by the Engineer.
- D. Accelerating admixture (Type E, ASTM C494) or admixtures containing chlorides, including calcium chloride, will not be allowed.
- E. Fly ash shall not be used.
- F. Blast furnace slag shall not be used.
- G. Foaming agents for cellular concrete backfill shall conform to the following requirements:
 - 1. Active Ingredients: Polyepoxide-Alkylene polypol (Approximately 30%).
 - 2. PH: 6.0 to 7.0.
 - 3. Viscosity: 5 centistokes/minimum.
 - 4. Solubility: Completely soluble in water.
 - 5. Dosage: As recommended by the foam manufacturer.
- H. The Contractor shall be responsible for the compatibility of the admixtures used in the grout and shall verify this requirement during laboratory mix proportioning tests on backfill grout. Materials that are known to promote corrosion of steel shall not be used.

2.04 WATER

- A. Potable water used for mixing and curing concrete shall be clean, fresh, and free from injurious substances (oils, acids, alkalis, salts, organic matter). If suspected of being of questionable quality, water shall meet limits of comparison tests with distilled water in accordance with AASHTO T26.

2.05 CHLORIDES

- A. The total soluble chlorides in fine aggregate, admixtures, and water, combined in the same amounts as in the grout mix, shall not exceed 250 ppm when tested in accordance with ASTM D512, Method A, Beckman Chloride Electrode Method or equal.

2.06 MATERIAL SOURCES

- A. Once the sources are selected, the Contractor shall not change the sources of cement, aggregate, or admixtures without the approval of the Engineer.

2.07 DESIGN MIX

- A. Mix Proportioning for Backfill Grout

1. The backfill grout shall be proportioned in accordance with ASTM C938 in an approved laboratory. The Contractor shall test one or more trial mixes to optimize the flowability, bleeding and shrinkage, and strength requirements as specified below:
 - a. The minimum cement content shall be determined from the laboratory trial mixes.
 - b. The water-to-cement ratio shall be the minimum necessary consistent with flowability requirement.
 - c. The backfill grout shall have an initial flowability not exceeding 20 seconds determined in accordance with ASTM C939. The flow shall not be greater than 35 seconds after 30 minutes mixing, when grout has been continuously agitated. The consistency shall also be determined by a slump test in accordance with ASTM C143. A correlation shall be established between the flow cone efflux time and the slump measurements of the grout for field quality-control testing.
 - d. The backfill grout shall not bleed more than 2% nor shall it exhibit expansion greater than 5% in the plastic state when tested in accordance with ASTM C940.
 - e. The initial setting time of the backfill grout shall not be less than 4 hours.
 - f. The minimum compressive strength of the grout shall be 800 psi at 28 days when tested in accordance with ASTM C942. However, the Engineer may waive the minimum compressive strength requirement based on backfill grout trial mix testing and if necessary to improve flowability and pumpability of the grout mix.
 - g. The minimum pH of the grout shall not be less than 12 when tested in accordance with ASTM E70.
 - h. The minimum cast density of cellular concrete backfill containing foaming agent shall not be less than 40 pounds per cubic foot.
2. The Contractor shall test the selected backfill grout mix proportions for suitability for pumping under pressure and shall ensure that the mix does not show segregation or line blockage.

3. The backfill grout mix report submitted by the Contractor shall include the following information at a minimum:
 - a. Source, description, and manufacturer of all materials.
 - b. Certified material test reports, manufacturer's certification, or laboratory reports that document that all materials meet the requirements of these Specifications.
 - c. The exact weight or volume of materials used in the laboratory trial mixes.
 - d. The as-mixed backfill grout shall be tested in accordance with the following ASTM Standards and the test results reported:
 - (1) Specific gravity of sand (SSD), ASTM C128.
 - (2) Absorption and Total Moisture, ASTM C128/C566.
 - (3) Temperature (Grout and Ambient), ASTM C1064.
 - (4) Flow, ASTM C939 (@ 0 min., 10 min., 20 min., 30 min., 60 min., and 90 min.).
 - (5) Expansion and Bleeding, ASTM C940.
 - (6) Compressive Strength, ASTM C942 (2, 3, 7, 14, 28 days).
 - (7) Time of Set, ASTM C953.
 - (8) Time of Set, ASTM C403.
 - (9) Length Change, ASTM C827, and ASTM C157 (except the specimens shall be stored at a relative humidity of 100% during curing). Report length change at 7, 14, 28, and 56 days.
 - (10) Unit Weight, ASTM C138.
 - (11) pH, ASTM E70.

The Contractor shall note any deviation from the requirements specified above in the report.

PART 3 EXECUTION

Pipes to be placed out of service shall not be backfill grouted until the Engineer has received a copy of the Certificate of Construction Completion from the Sarasota County Health Department.

3.01 BACKFILL GROUT

A. Formwork

The Contractor shall:

1. Joints formed between two adjoining placements at the vertical bulkhead or at the slope face of the prior placement are permitted and do not require preparations as construction joints.
2. Use temporary or permanent end bulkheads to facilitate placing the backfill grout. Locate bulkheads as required to allow placing backfill grout and controlling backfill operations. Bulkheads may be left in place provided the material is approved by the Engineer.

B. Preparation for Placing

1. The Engineer must approve any track system or pipe installation system to be left in place during and after backfill grout operations.

C. Batch Plant

1. At the Contractor's option and subject to approval from the Engineer, provide on site a modern and dependable batch-type mixing plant of a capacity sufficient to meet the construction schedule.
 - a. All equipment for batching material and mixing backfill grout shall conform to ASTM C94 and the following standards of the Concrete Plant Manufacturer's Bureau, affiliated with the National Ready-Mixed Concrete Association:
 - (1) Concrete Plant Standards
 - (2) Concrete Plant Mixer Standards
2. Batching shall be automatic, as defined in ACI 304. All material entering the backfill grout shall be mechanically batched and measured by weight, except for water, which may be metered.
3. Truck mixers and agitators shall conform to the Trucker Mixer and Agitator Standards of the Truck Mixer Manufacturer's Bureau.
4. The Contractor shall provide adequate facilities for cooling the backfill grout to meet the specified fresh grout placing temperature. Facilities shall include capabilities for furnishing, storing, and batching of ice or nitrogen for cooling the grout mix.

5. Equipment shall be washed at locations designated by the Engineer. Truck mixers and agitators shall be washed frequently to prevent mortar buildup within the equipment. All wash-water shall be properly disposed of before taking on another load of backfill grout. The Contractor shall prevent accidental discharge of wash-water to wetlands, drainage ditches, etc.

D. Transporting and Conveying

1. The Contractor shall ensure that the methods and equipment used for transporting or conveying backfill grout from the point of delivery and the time that elapses during transportation or conveyance do not cause segregation of the mix or degrade the consistency as it is delivered to the injection port. All equipment shall be clean and in good mechanical condition. Aluminum parts in conveying equipment will not be permitted to come in contact with grout.
2. The Contractor shall transfer grout from a mixer to a conveying device or from one conveying device to another through a hopper or other suitable equipment to prevent segregation. Transfer backfill grout from the ground surface to the desired location only through a closed-conduit pressurized system.
3. Placement by pumping shall be in accordance with the approved procedure. Pumping equipment shall be of sufficient size and capacity to place backfill grout to distances required and volumes compatible with the batching and mixing equipment.
4. Each backfill grout injection connection shall be a T-fitting equipped with a pressure gauge and monitoring system and an isolation valve. The pressure gauge shall be certified to ANSI B40 Grade 2A and shall have a range no greater than twice the design backfill grout pressure.
5. The Contractor shall notify the Engineer at least 24 hours before placing backfill grout and place backfill grout only in the presence of the Engineer.
6. The Contractor shall control the grout temperature delivered into the pipe. The backfill grout temperature shall not exceed 85°F. The Engineer will reject backfill grout that is delivered into the form at a temperature exceeding 85°F.
7. The Contractor shall place grout within 90 minutes after water, cement, fine aggregate, and admixtures have been added and properly dispose of material off site that has not been placed within this time limit.
8. Retempering of backfill grout shall not be permitted. Backfill grout which has become so stiff that proper placing cannot be ensured shall be considered waste and properly disposed of.

E. Placing

1. The limits of each backfill grout placement shall be predetermined by the size and capacity of batching equipment, the initial set time of the proposed backfill grout mix, and the placing method.
 - a. Unless otherwise approved by the Engineer, the Contractor shall provide a pressurized closed-conduit grout conveyance system to pump backfill grout into pipelines indicated on the Plans. The closed-conduit conveyance system shall be set up and the backfill grout shall be injected through temporary backfill grout injection connections/assemblies installed along the top of the pipe. Each temporary backfill grout injection connection/ assembly shall include an isolation valve.
 - b. Generally, the Contractor shall initiate backfill grout injection at one end of the pipe and then sequence backfill grout injection toward the other end. The Contractor's work plan shall provide details regarding the proposed backfill grout injection system and backfill grout injection sequencing and indicate how the Contractor proposes to evacuate all air from the pipe. The Contractor shall continuously monitor the backfill grout injection pressure.
 - c. Unless otherwise approved by the Engineer, after backfill grout has set, remove backfill grout injection connections/assemblies and plug holes with backfill grout.

3.02 FIELD QUALITY CONTROL

A. Tests for Backfill Grout

1. During each shift when the backfill grout plant is operating, the Contractor shall test for fine aggregate grading in accordance with ASTM C136. In addition, the moisture content of fine aggregate shall also be determined during every shift in accordance with ASTM C566.
2. The Contractor shall sample backfill grout in accordance with ASTM C172 at the point of leaving the truck/agitator if the last piece of conveying equipment is a chute, bucket, conveyer system, or similar system or at the point of pump line discharge in case of pumped backfill grout. The Engineer will waive the sampling requirements at the pump

line discharge provided a satisfactory correlation is established in backfill grout properties between the truck agitator and the pump line discharge.

- a. Test for consistency in accordance with ASTM C939 on randomly selected batches of backfill grout at a frequency of one test for every 50 cubic yards of backfill grout placed.
- b. The Contractor shall test compressive strength at a frequency of one strength test for every 100 cubic yards or part thereof. Backfill grout shall be placed in accordance with ASTM C942 or C945, as applicable. A minimum of six standard cube specimens shall be molded in accordance with ASTM C31. Test three cubes at 7 days and the other three at 28 days.
- c. Test for unit weight on each backfill grout batch sample from which consistency tests are made in accordance with ASTM C138.

B. Inspection

1. The Contractor shall inspect all backfilling operations, including preparing, transporting and conveying, placing, and testing backfill grout for compliance with the requirements of this Section.

END OF SECTION

DIVISION 3

CONCRETE

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SECTION 03301
CONCRETE AND REINFORCING STEEL

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment, and incidentals required to perform all concrete work as shown on the Drawings and as specified in this Section. This shall include valve box and backflow preventer pads, plug restraints, and any driveway, curbing, sidewalk, or other restoration that becomes required due to damage by the Contractor.

1.02 RELATED WORK (NOT USED)

1.03 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance. Reproductions of contract drawing are unacceptable. Submit full fabrication drawings and technical data on all materials and components. Submit other data specified in this Section when required. Submittals shall include at least the followings:

- A. Shop Drawings and Technical Data:
 - 1. Joints and joint accessories.
 - 2. Reinforcing steel including bar schedules and bending details.
 - 3. Concrete mix for each formulation of concrete proposed for use, including constituent quantities per cubic yard, water cementitious ratio, type, and manufacturer of cement.
 - 4. Formwork and accessories.
 - 5. Grout.
 - 6. Two samples of each type of mechanical reinforcing steel connectors.
- B. Samples:
 - 1. Two samples of each type of mechanical reinforcing steel connections
- C. Test Reports:
 - 1. Sieve analysis of fine and coarse aggregates.

2. Concrete mix for each formulation of concrete proposed for use, including constituent quantities per cubic yard, water cementitious ratio, type and manufacturer of cement, and either a. or b. below:
 - a. Standard deviation data for each proposed concrete mix based on statistical records.
 - b. Water cementitious ratio curve for each proposed concrete mix based on laboratory tests. Give average cylinder strength test results at 28 days for laboratory concrete mix designs. Provide results of 7- and 14-day tests if available.
3. Concrete compressive strength, air content, and slump tests.

D. Certifications:

1. Certify that admixtures used in the same concrete mix are compatible with each other and the aggregates.
2. Material Safety Data Sheet (MSDS).
3. Curing concrete elements.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be in accordance with the currently effective Florida Building Code (FBC). The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

A. American Society for Testing and Materials (ASTM)

1. ASTM A185—Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
2. ASTM A615—Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
3. ASTM C31—Standard Practice for Making and Curing Concrete Test Specimens in the Field.
4. ASTM C33—Standard Specification for Concrete Aggregates.
5. ASTM C94—Standard Specification for Ready-Mixed Concrete.
6. ASTM C143—Standard Test Method for Slump of Hydraulic-Cement Concrete.
7. ASTM C150—Standard Specification for Portland Cement.
8. ASTM C171—Standard Specification for Sheet Materials for Curing Concrete.

9. ASTM C173—Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
10. ASTM C231—Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
11. ASTM C260—Standard Specification for Air-Entraining Admixtures for Concrete.
12. ASTM C309—Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
13. ASTM C494—Standard Specification for Chemical Admixtures for Concrete.
14. ASTM C618—Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
15. ASTM C827—Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures.
16. ASTM C881—Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
17. ASTM C920—Standard Specification for Elastomeric Joint Sealants.
18. ASTM C932—Standard Specification for Surface-Applied Bonding Compounds for Exterior Plastering.
19. ASTM C990—Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.
20. ASTM C1107—Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
21. ASTM C1116/C1116M—Standard Specification for Fiber-Reinforced Concrete.
22. ASTM D1751—Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
23. ASTM D1752—Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.
24. ASTM D2103—Standard Specification for Polyethylene Film and Sheeting.
25. ASTM D4397—Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications.
26. ASTM D6690—Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.

B. American Concrete Institute (ACI)

1. ACI 117—Specifications for Tolerances for Concrete Construction and Materials.

2. ACI 211.1—Standard Practice for Selecting proportions for Normal, Heavyweight, and Mass Concrete.
3. ACI 301—Specifications for Structural Concrete.
4. ACI 305R—Hot Weather Concreting.
5. ACI 306R—Cold Weather Concreting.
6. ACI 306.1—Standard Specification for Cold Weather Concreting.
7. ACI 315—Details and Detailing of Concrete Reinforcement.
8. ACI 318—Building Code Requirements for Structural Concrete.
8. ACI 347R—Guide to Formwork for Concrete.
9. ACI/MCP-4—Manual of Concrete Practice – Volume 4 – Bridges, Substructures, Sanitary, and Other Special Structures – Structural Properties.

C. Concrete Reinforcing Steel Institute (CRSI)

1. MSP—Manual of Standard Practice.

1.06 QUALITY ASSURANCE

- A. Reinforced concrete shall comply with ACI 318; the recommendations of ACI 350R; and other stated requirements, codes, and standards. The most stringent requirement of the codes, standards, and this Section shall apply when conflicts exist.
- B. Only one source of cement and aggregates shall be used on any one structure. Concrete shall be uniform in color and appearance.
- C. Thirty days in advance of placing concrete, the Contractor shall discuss with the Engineer the sources of individual materials and batched concrete proposed for use, discuss placement methods and curing, and propose methods of hot and cold weather concreting as required.
- D. For restoration of sidewalks and driveways only, a firm providing field testing and inspection services will be approved by the Owner. The cost of such work, except as specifically stated otherwise, shall be paid by the Contractor. The following items shall be tested by the Owner to verify conformity with this Specification Section:
 1. Concrete placements—compressive strength (cylinders), compressive strength (cores), slump, and air content.
 2. Other materials or products that may come under question.
 3. All materials incorporated in the work shall conform to accepted samples

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.09 QUALIFICATIONS (NOT USED)

1.10 TESTING REQUIREMENTS (NOT USED)

1.11 WEATHER CONSTRAINTS (NOT USED)

PART 2 PRODUCTS

2.01 GENERAL

- A. The use of the manufacturer's name and model or catalog number is to establish the standard of quality and general configuration desired.
- B. Like items of materials shall be the end products of one manufacturer to provide standardization of appearance, maintenance, and manufacturer's service.
- C. Materials shall comply with this Section and any applicable State or local requirements.

2.02 MATERIALS

- A. Cement: Domestic Portland cement complying with ASTM C150. Air entraining cements shall not be used. The brand of cement shall be subject to approval by the Engineer and one brand shall be used throughout the Work. The following cement type(s) shall be used:
 - 1. Class A,B,C,D Concrete Type II with the addition of fly ash resulting in C3A being below 5% of total cementitious content, Type III limited to 5% C3A, or Type V.
- B. Aggregate: Washed inert natural sand conforming to the requirements of ASTM C33.
- C. Water: Potable water free from detrimental amounts of oils, acids, alkalis, salts, organic matter, or other deleterious substances.

- D. Admixtures: Admixtures shall be free of chlorides and alkalis (except for those attributable to water). When more than one admixture is required to be used in a concrete mix, the admixtures shall be from the same manufacturer. Admixtures shall be compatible with the concrete mix, including other admixtures, and shall be suitable for use in contact with potable water after 30 days of concrete curing.
1. Air-Entraining Admixture: Shall not be used.
 2. Water-Reducing Agent: The admixture shall comply with ASTM C494, Type A.
 3. Admixtures causing retarded or accelerated setting of concrete shall not be used without written approval from the Engineer. When allowed, the admixtures shall be retarding or accelerating water-reducing or high-range water-reducing admixtures.
- E. Pozzolan (Fly Ash) shall be Class F fly ash complying with ASTM C618, except that the Loss on Ignition (LOI) shall be limited to 3% maximum.
- F. Materials for curing concrete:
1. Sheet Curing Materials—Waterproof paper, polyethylene film, or white burlap polyethylene sheeting shall comply with ASTM C171.
 2. Liquid Curing Compound—Liquid membrane forming curing compound shall comply with the requirements of ASTM C309, Type 1 D (clear or translucent with fugitive dye) and shall contain no wax, paraffin, or oil. The curing compound shall be approved for use in contact with potable water after 30 days according to NSF 61 (non-toxic and free of taste or odor).
- G. Chemical hardener shall be Lapidolith by Sonneborn, Hornolith by A.C. Horn, Penalith by W.R. Meadows, or equal fluosilicate base material.
- H. Concrete sealer shall be "Kure N Seal," by Sonneborn, Minneapolis, MN or equal.

2.03 MIXES

- A. Select proportions of ingredients to meet the design strength and materials limits specified in Table 1 and to produce concrete having proper workability, durability, strength, appearance, and other required properties. Proportion ingredients to produce a homogenous mixture, which will readily work into corners and angles of forms and around reinforcement without permitting materials to segregate or allowing excessive free water to collect on the surface.

- B. The design mix shall be based on standard deviation data of prior mixes with essentially the same proportions of the same constituents or, if such data are not available, be developed by a testing laboratory acceptable to the Engineer and engaged by and at the expense of the Contractor. Mixes based on standard deviation shall be accepted based on the modification factors for standard deviation tests contained in ACI 318. The water content of the concrete mix, determined by laboratory testing, shall be based on a curve showing the relation between water cementitious ratio and 7- and 28-day compressive strengths of concrete made using the proposed materials. The curves shall be determined by four or more points, each representing an average value of at least three test specimens at each age. The curves shall have a range of values sufficient to yield the desired data, including the specified design strengths as modified below, without extrapolation. The water content of the concrete mixes to be used, as determined from the curve, shall correspond to strengths 16% greater than the specified design strengths. The resulting mix shall not conflict with the limiting values for maximum water cementitious ratio and net minimum cementitious content as specified in Table 1.
- C. Slump of the concrete as measured by ASTM C143 shall be as shown in Table 1.

TABLE 1
CONCRETE MIX REQUIREMENTS

Class	Design Strength (1)	Cement (2)	Fine Aggregate (2)	Coarse Aggregate (3)	Cementitious Content (4)	
B	3,000	C150 Type II	C33	57	480 min.	
Class	W/C Ratio (5)	Fly Ash	AE Range (6)	WR (7)	HRWR (8)	Slump Range Inches
B	0.54 max.	--	2.5 to 5	Yes	*	1 – 3

NOTES:

- (1) Minimum compressive strength in psi at 28 days.
- (2) ASTM designation.
- (3) Size Number in ASTM C33.
- (4) Cementitious content in lbs/cu yd.
- (5) W/C is Water-Cementitious ratio by weight.
- (6) AE is percent air-entrainment.
- (7) WR is water-reducer admixture.
- (8) HRWR is high-range water-reducer admixture.
- * HRWR used at the Contractor's option.

2.04 CONCRETE REINFORCEMENT

- A. Reinforcing steel shall be deformed bars and shall comply with ASTM A615, Grade 60.
- B. Fiber reinforcement shall be synthetic fibers with 100% polypropylene collated, fibrillated fibers and with a minimum tensile strength of 70 ksi. Fiber-reinforced concrete shall be in accordance with ASTM C1116/C1116M, Type III, synthetic fiber-reinforced concrete. Use a minimum of 1.5 pounds of fibers per cubic yard of concrete. Add fibers at the batch plant.

2.05 FORMS

- A. Forms for cast-in-place concrete shall be made of wood, metal, or other approved material. All forms shall be designed and constructed to provide a flat, uniform concrete surface requiring minimal finish or repairs.
- B. Forms shall be free from roughness and imperfections, substantially watertight, and adequately braced and tied to prevent motion when concrete is placed. No wooden spreaders will be allowed in the concrete.
- C. The form-release agent shall be coated on all surfaces in contact with concrete using effective, non-staining, non-residual, water-based, bond-breaking form coatings.
- D. Wire ties will not be allowed. Metal ties or anchorages necessary within the forms shall be so constructed that the metal work can be removed for a depth of at least 1 inch from the surface of the concrete without injury to such surface by spalling or otherwise. Forms shall be thoroughly cleaned before using and shall be treated with oil or other approved material.
- E. All exposed edges of the finished concrete shall be chamfered 3/4 inch.

2.06 EXPANSION/CONTRACTION JOINTS

- A. Pre-molded joint fillers for water holding structures shall be non-extruding and resilient non-bituminous type and comply with ASTM D1752, Type III. Joint fillers for sidewalk and roadway pavements shall be asphalt-impregnated fiber board conforming to ASTM D1751.
- B. Joint sealants shall comply with ASTM D6690, Type M class 25 for horizontal surface, and ASTM C920, Type M grade NS class 25 for vertical surface greater than 3% slope.

- C. Bond breaker shall be an adhesive-backed glazed butyl or polyethylene tape.

2.07 BONDING MATERIALS

- A. The concrete bonding agent shall be an aqueous-phase, film-forming, non-oxidizing, freeze- and thaw-resistant compound agent suitable for brush or spray application conforming to ASTM C932.
- B. Epoxy adhesive binder shall be two-component, epoxy-polysulfide polymer-type bind with amine-type curing agent conforming to ASTM C881, Type II.

PART 3 EXECUTION

3.01 REINFORCING STEEL

- A. Reinforcement shall be accurately fabricated to the dimensions shown.
- B. Before being placed in position, reinforcement shall be thoroughly cleaned of loose mill and rust scale, dirt, and other coatings that reduce or destroy bond. Where there is delay in depositing concrete after reinforcement is in place, reinforcement shall be reinspected and cleaned when necessary.
- C. Reinforcement that is to be exposed for a considerable length of time after being placed shall be painted with a heavy coat of cement grout, if required.
- D. In no case shall any reinforcing steel be covered with concrete until the number and position of the reinforcements have been checked by the Engineer and his/her permission given to proceed with the concreting.

3.02 CONCRETE MIXING AND TRANSPORTING

- A. Concrete shall be ready-mixed concrete produced by equipment acceptable to the Engineer. No hand mixing will be permitted. Clean each transit mix truck drum and reverse drum rotation before the truck proceeds under the batching plant. Equip each transit mix truck with a continuous, nonreversible, revolution counter showing the number of revolutions at mixing speeds.
- B. Ready mix concrete shall be transported to the site in watertight agitator or mixer trucks loaded not in excess of their rated capacities as stated on the name plate.
- C. Keep the water tank valve on each transit truck locked at all times. Any addition of water must be directed by the Engineer. Added water shall be incorporated by additional mixing of at least 35 revolutions. All added water shall be metered and the amount of water added shall be shown on each delivery ticket.

- D. All central plant and rolling stock equipment and methods shall comply with ACI 318 and ASTM C94.
- E. Select equipment of size and design to ensure continuous flow of concrete at the delivery end. Metal or metal-lined non-aluminum discharge chutes shall be used and shall have slopes not more than 1 vertical to 2 horizontal and not less than 1 vertical to 3 horizontal. Chutes more than 20 feet long and chutes not meeting slope requirements may be used if concrete is discharged into a hopper before distribution.
- F. Re-tempering (mixing with or without additional cement, aggregate, or water) of concrete or mortar which has reached initial set will not be permitted.
- G. Handle concrete from mixer to placement as quickly as practicable while providing concrete of required quality in the placement area. Dispatch trucks from the batching plant so they arrive at the work site just before the concrete is required, thus avoiding excessive mixing of concrete while waiting or delays in placing successive layers of concrete in the forms.
- H. Furnish a delivery ticket for ready-mixed concrete to the Engineer as each truck arrives. Each ticket shall provide a printed record of the weight of cement and each aggregate as batched individually. Use the type of indicator that returns for zero punch or returns to zero after a batch is discharged. Clearly indicate the weight of fine and coarse aggregate, cement, and water in each batch, the quantity delivered, the time any water is added, and the numerical sequence of the delivery. Show the time of day batched and time of discharge from the truck. Indicate the number of revolutions of the truck mixer.
- I. Temperature and Mixing Time Control
 - 1. In cold weather, do not allow the as-mixed temperature of the concrete and concrete temperatures at the time of placement in the forms to drop below 40°F.
 - 2. If the water or aggregate has been heated, combine the water with aggregate in the mixer before cement is added. Do not add cement to mixtures of water and aggregate when the temperature of the mixture is greater than 90°F.
 - 3. In hot weather, cool ingredients before mixing to maintain temperature of the concrete below the maximum placing temperature of 90°F. If necessary, substitute well-crushed ice for all or part of the mixing water.
 - 4. The maximum time interval between adding mixing water and/or cement to the batch and placing concrete in the forms shall not exceed the values shown in Table 2.

TABLE 2
MAXIMUM TIME TO DISCHARGE OF CONCRETE

Air or Concrete Temperature (whichever is higher)	Maximum Time
80 to 90°F (27 to 32°C)	45 minutes
70 to 79°F (21 to 26°C)	60 minutes
40 to 69°F (5 to 20°C)	90 minutes

- J. If an approved high-range water-reducer (plasticizer) is used to produce plasticized concrete, the maximum time interval shall not exceed 90 minutes.

3.03 CONCRETE APPEARANCE

- A. Concrete mix showing either poor cohesion or poor coating of the coarse aggregate with paste shall be remixed. If this does not correct the condition, the concrete shall be rejected.
- B. Concrete for the work shall provide a homogeneous structure which, when hardened, will have the required strength, durability, and appearance. Mixtures and workmanship shall be such that concrete surfaces, when exposed, will require no finishing. When concrete surfaces are stripped, the concrete when viewed in good lighting from 10 feet and at 20 feet shall show no visible defects.

3.04 PLACING CONCRETE

- A. Reinforcement, where required, shall be accurately placed in the exact positions shown, shall be secured against displacement with annealed iron wire ties or suitable clips at intersections, and shall have a clear space of 2 inches between the steel and face of forms unless otherwise indicated. Wire ties passing through the forms to hold the steel in proper position shall not be allowed. Reinforcement shall be free from rust, scale, dirt, grease, and damaging contaminants.
- B. No concrete shall be placed until the Engineer has approved forms and method of placement. Before concrete is deposited, all debris, foreign matter, dirt, and water shall be removed from the forms. The surface of concrete previously placed, such as horizontal construction joints, shall be cleaned and brushed with cement paste. Concrete shall not be placed in water or submerged within 24 hours after placing, nor shall running water be permitted to flow over the surface of fresh concrete within 4 days after its placing.

- C. Deposit concrete as near its final position as possible to avoid segregation due to rehandling or flowing. Pumping of concrete will be permitted when an approved design mix and aggregate sizes, suitable for pumping, are used. Do not deposit concrete that has partially hardened or has been contaminated by foreign materials. If the section cannot be placed continuously, place construction joints as specified or as approved.
- D. High-frequency mechanical vibrators shall be used to the extent necessary to obtain proper consolidation of the concrete. Care shall be taken to avoid segregating aggregates by excessive vibration. Concrete adjacent to forms and around pipe stubs shall be carefully spaded or rodded.
- E. No concrete shall be mixed or placed during freezing weather without explicit permission. When placing concrete when the air temperature is below 40°F, heat the water, sand, and gravel so that the temperature of the concrete will be at least 50°F. This temperature shall be maintained for 72 hours after placing.

3.05 FIELD TESTS

- A. The firm providing field testing will take sets of three field control cylinder specimens during the progress of the work, in compliance with ASTM C31. The number of sets of concrete test cylinders taken of each class of concrete placed each day shall not be fewer than one set nor fewer than one set for each new placement. One cylinder shall be broken at 7 days and two cylinders shall be broken and their strengths averaged at 28 days. When the average 28-day compressive strength of the cylinders in any set falls below the specified compressive strength or below proportional minimum 7-day strengths (where the proper relation between 7- and 28-day strengths has been established by tests), the Engineer may reject the concrete represented by the set of cylinders and may require modification of the concrete and/or require modification of the proportions, water content, or temperature conditions of the design mix to achieve the required strengths.
- B. The Contractor shall cooperate in testing by allowing free access to the work for selecting samples, providing an insulated closed curing box for specimens, protecting the specimens against injury or loss through his/her operations, and furnishing material and labor required for taking concrete cylinder samples. All shipping of specimens will be paid for by the Owner.
- C. Slump tests will be made in the field by the firm providing field testing in conformity with ASTM C143.

- D. Tests for air content shall be made in compliance with either the pressure method complying with ASTM C231 or by the volumetric method complying with ASTM C173.

3.06 FORMED SURFACES

- A. Forms shall remain in-place for the time specified in ACI/MCP-4. Do not remove forms and shores until the concrete has gained sufficient strength to support its weight and superimposed loads.
- B. Exercise care to prevent damaging edges or obliterating the lines of chamfers, rustications, or corners when removing the forms or performing any other work adjacent to such chamfers, rustications, or corners.
- C. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete.
- D. Rough Form Finish
 - 1. Immediately after stripping forms and before the concrete has changed color, carefully remove all fins and projections.
 - 2. Promptly fill holes left by tie cones and defects as specified.

3.07 FLOORS AND SLABS

- A. Floated Finish
 - 1. Machine Floating
 - a. Screed floors and slabs with straightedges to the established grades shown on the Drawings. Immediately after final screeding sprinkle a dry cement/sand shake in the proportion of two sacks of Portland cement to 350 pounds of coarse natural concrete sand evenly over the surface at the rate of approximately 500 pounds/1,000 square feet of floor. Do not sprinkle neat, dry cement on the surface.
 - b. The application of the cement/sand shake may be eliminated at the discretion of the Engineer if the base slab concrete exhibits adequate fattiness and homogeneity and the need is not indicated. When the concrete has hardened sufficiently to support the weight of a power float without the float's digging into or disrupting the level surface, thoroughly float the shake into the surface with a heavy revolving disc-type power compacting machine capable of providing a 200-pound compaction force distributed over a 24-inch-diameter disc.

- c. Start floating along walls and around columns and then move systematically across the surface leaving a matte finish.
- d. The compacting machine shall be the "Kelly Power Float with Compaction Control" as manufactured by Kelley Industries of SSP Construction Equipment Inc., Pomona, CA or equal. Troweling machines equipped with float (shoe) blades that are slipped over the trowel blades may be used for floating. Floating with a troweling machine equipped with normal trowel blades will not be permitted. The use of any floating or troweling machine which has a water attachment for wetting the concrete surface during finishing will not be permitted.

2. Hand Floating

- a. In lieu of power floating, small areas may be compacted by hand floating. The dry cement/sand shake previously specified shall be used unless specifically eliminated by the Engineer. Screed the floors and slabs with straightedges to the established grades shown on the Drawings. While the concrete is still green but sufficiently hardened to support a finisher and kneeboards with no more than 1/4-inch indentation, wood float to a true, even plane with no coarse aggregate visible. Use sufficient pressure on the wood floats to bring moisture to the surface.

3. Finishing Tolerances

- a. Level floors and slabs to a tolerance of plus or minus 1/8 inch when checked with a 10-foot straightedge placed anywhere on the slab in any direction. Where drains occur, pitch floors to drains so that no low spots are left undrained. Failure to meet either of the above requirements shall be cause for removal, grinding, or other correction as directed by the Engineer.

B. Broom Finish

- 1. Screed slabs with straightedges to the established grades indicated on the Drawings. When the concrete has stiffened sufficiently to maintain small surface indentations, draw a stiff bristle broom lightly across the surface in the direction of drainage or, in the case of walks and stairs, perpendicular to the direction of traffic to provide a non-slip surface.

C. Steel Trowel Finish

1. Finish concrete as specified in Article 3.04. Then, hand steel trowel to a perfectly smooth, hard, even finish free from high or low spots or other defects.

D. Concrete Sealer

1. Prepare and seal surfaces indicated on the room finish schedule to receive a sealer as follows:
 - a. Finish concrete as specified in the preceding paragraphs and in accordance with the Schedule in Article 3.13 below.
 - b. Newly Placed Concrete: Surface must be sound and properly finished. Surface is application ready when it is damp but not wet and can no longer be marred by walking workmen.
 - c. Newly Cured Bare Concrete: Level any spots gouged out by trades. Remove all dirt, dust, dropage, oil, grease, asphalt, and foreign matter. Cleanse with caustics and detergents as required. Rinse thoroughly and allow to dry so that surface is no more than damp and not wet.
 - d. Aged Concrete: Restore surface soundness by patching, grouting, filling cracks, and holes, etc. Surface must also be free of any dust, dirt, and other foreign matter. Use power tools and/or strippers to remove any incompatible sealers or coatings. Cleanse as required following the procedure indicated under cured concrete.
 - e. Methods: Apply sealer to form a continuous, uniform film by spray, soft bristle pushbroom, long nap roller, or lambswool applicator. Ordinary garden type sprayers, using neoprene hose, are recommended for best results.
 - f. Applications: For curing only, apply the first coat evenly and uniformly as soon as possible after final finishing at the rate of 200 to 400 square feet per gallon. Apply the second coat when all trades are completed and the structure is ready for occupancy at the rate of 400 to 600 square feet per gallon.
 - g. To meet guarantee and to seal and dustproof, two coats are required. For sealing new concrete, both coats shall be applied full strength. On aged concrete, when renovating, dustproofing, and sealing, the first coat should be thinned 10 to 15% with reducer in accordance with the manufacturer's directions.

3.08 CONCRETE RECEIVING CHEMICAL HARDENER

- A. After 28 days minimum concrete cure, apply chemical hardener in three applications to a minimum total coverage of the undiluted chemical of 100 square feet per gallon and in accordance with the manufacturer's recommendations as reviewed.

3.09 APPROVAL OF FINISHES

- A. All concrete surfaces, when finished, will be examined by the Engineer.
- B. Surfaces which in the opinion of the Engineer are unsatisfactory shall be refinished or reworked.

3.10 SCHEDULE OF FINISHES

- A. Concrete shall be finished as specified either to remain as natural concrete or to receive an additional applied finish or material under another Section.
- B. Concrete for the following conditions shall be finished as noted on the Drawings and as further specified in this Section:
 - 1. Concrete Not Exposed to View and Not Scheduled to Receive an Additional Applied Finish or Material: Rough form finish. See Paragraph 3.06D.
 - 2. Concrete for Exterior Walks and Interior and Exterior Stairs: Broomed finish perpendicular to direction of traffic. See Paragraph 3.07B.

3.11 CURING AND PROTECTION

- A. The Contractor shall protect all concrete work against injury from the elements and defacements of any nature during construction operations.
- B. Curing Methods
 - 1. Curing Methods for Concrete Surfaces: Cure concrete to retain moisture and maintain specified temperature at the surface for a minimum of 7 days after placement. Curing methods to be used are as follows:
 - a. Water Curing: Keep entire concrete surface wet by ponding, continuous sprinkling, or by covering with saturated burlap. Begin wet cure as soon as concrete attains an initial set and maintain wet cure 24 hours a day.

- b. Sheet Material Curing: Cover entire surface with sheet material. Securely anchor sheeting to prevent wind and air from lifting the sheeting or entrapping air under the sheet. Place and secure sheet as soon as initial concrete set occurs.
- c. Liquid Membrane Curing: Apply over the entire concrete surface except for surfaces to receive additional concrete. DO NOT place curing compound on any concrete surface where additional concrete is to be placed, where concrete sealers or surface coatings are to be used, or where the concrete finish requires an integral floor product. Apply curing compound as soon as the free water on the surface has disappeared and no water sheen is visible, but not after the concrete is dry or when the curing compound can be absorbed into the concrete. Application shall be in compliance with the manufacturer's recommendations.

2. Specified applications of curing methods.

- a. Slabs for Water Containment Structures: Water curing only.
- b. Slabs on Grade and Footings (not used to contain water): Water curing, sheet material curing, or liquid membrane curing.
- c. Structural Slabs (other than water containment): Water curing or liquid membrane curing.
- d. Horizontal Surfaces that will Receive Additional Concrete, Coatings, Grout, or Other Material that Requires Bond to the Substrate: Water curing.
- e. Formed Surfaces: None if nonabsorbent forms are left in place 7 days. Water cure if absorbent forms are used. Sheet cured or liquid membrane cured if forms are removed before 7 days.
Concrete Joints: Water cured or sheet material cured.

C. Finished surfaces and slabs shall be protected from the direct rays of the sun to prevent checking and crazing.

D. Cold Weather Concreting:

- 1. *Cold weather* is defined as a period when the average daily outdoor temperature drops below 40°F for more than 3 successive days. The average daily temperature shall be calculated as the average of the highest and the lowest temperature during the period from midnight to midnight.
- 2. Cold weather concreting shall conform to ACI 306.1 and the additional requirements specified in this Section. Temperatures at the concrete placement shall be recorded at 12-hour intervals (minimum).

3. The Contractor shall discuss a cold weather work plan with the Engineer. The discussion shall encompass the methods and procedures proposed for use during cold weather, including the production, transportation, placement, protection, curing, and temperature monitoring of the concrete. The procedures to be implemented upon abrupt changes in weather conditions or equipment failures shall also be discussed. Cold weather concreting shall not begin until the work plan is acceptable to the Engineer.
4. During periods of cold weather, concrete shall be protected to provide continuous warm, moist curing (with supplementary heat when required) for a total of at least 350 degree-days of curing.
 - a. *Degree-days* are defined as the total number of 24-hour periods multiplied by the weighted average daily air temperature at the surface of the concrete (e.g., 5 days at an average of 70°F = 350 degree-days).
 - b. To calculate the weighted average daily air temperature, sum hourly measurements of the air temperature in the shade at the surface of the concrete taking any measurement less than 50°F as 0°F. Divide the sum thus calculated by 24 to obtain the weighted average temperature for that day.
5. Salt, manure, or other chemicals shall not be used for protection.
6. The protection period for concrete being water cured shall not be terminated during cold weather until at least 24 hours after water curing has been terminated.

E. Hot Weather Concreting

1. *Hot weather* is defined as any combination of high air temperatures, low relative humidity, and wind velocity which produces a rate of evaporation estimated in accordance with ACI 305R, approaching or exceeding 0.2 pound/square foot/hour).
2. Concrete placed during hot weather shall be batched, delivered, placed, cured, and protected in compliance with the recommendations of ACI 305R and the additional requirements specified in this Section.
 - a. Temperature of concrete being placed shall not exceed 90°F and every effort shall be made to maintain a uniform concrete mix temperature below this level. The temperature of the concrete shall

be such that it will cause no difficulties from loss of slump, flash set, or cold joints.

- b. All necessary precautions shall be taken to deliver the concrete promptly, to place the concrete promptly upon its arrival at the job, and to provide vibration immediately after placement.
- c. The Engineer may direct the Contractor to immediately cover plastic concrete with sheet material.

- 3. The Contractor shall discuss with the Engineer a work plan describing the methods and procedures proposed to use for concrete placement and curing during hot weather. Hot weather concreting shall not begin until the work plan is acceptable to the Engineer.

3.12 STRIPPING AND FINISHING CONCRETE

- A. Forms shall not be stripped before the concrete has attained a strength of at least 30% of the specified design strength, unless otherwise approved by the Engineer. This is equivalent to approximately "100 day-degrees" of moist curing.
- B. Shores shall not be removed until the concrete has attained at least 70% of its specified design strength and sufficient strength to support safely its own weight and construction live loads.
- C. Care shall be exercised to prevent damaging edges or obliterating the lines of chamfers, rustications, or corners when removing the forms or doing any other adjacent work.
- D. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete to the satisfaction of the Engineer.
- E. As soon as forms have been stripped, remove form ties, if employed, and fill the recess to ensure complete water tightness. Defective concrete where it occurs shall be removed and replaced.
- F. Top surface of slabs shall be screeded to the established grades and shall be a true plane with a tolerance of 1/8 inch when checked with a 10-foot straightedge. The surface shall be finished to give a smooth, hard, even surface free from high or low spots or other defects. Failure to meet the condition shall be cause for removal, grinding, or other correction as directed by the Engineer

3.13 SCHEDULE

- A. The following (Table 3) are the general applications for the various concrete classes and design strengths:

TABLE 3
CONCRETE SCHEDULE

Class	Design Strength (psi)	Description
B	3,000	Concrete overlay slabs and pavements.

3.14 MISCELLANEOUS WORK

- A. Sleeve steel work required to be set in the concrete forms for attachment of structural and miscellaneous equipment shall be set or installed under this Section. The Contractor shall be fully responsible for the setting of such materials in the forms and shall correct all such materials not installed in a proper location or manner at his own expense.

END OF SECTION

DIVISION 9

FINISHES

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SECTION 09900
PAINTING AND COATING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section includes materials for and application of painting and coating systems for the following surfaces:
 - 1. Exposed metal.
 - 2. Buried metal.
 - 3. Metal in contact with concrete.
- B. It does not include coating steel water tanks and reservoirs.

1.02 RELATED WORK

- A. Section 03301, Concrete and Reinforcing Steel.
- B. Section 15110, Manual, Check, and Process Valves.
- C. Section 15155, Ductile Iron Fittings.

1.03 SUBMITTALS

- A. The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance.
- B. Submit manufacturer's data sheets showing the following information:
 - 1. Percent solids by volume.
 - 2. Minimum and maximum recommended dry-film thickness per coat for prime, intermediate, and finish coats.
 - 3. Recommended surface preparation.
 - 4. Recommended thinners.
 - 5. Statement verifying that the specified prime coat is recommended by the manufacturer for use with the specified intermediate and finish coats.
 - 6. Application instructions including recommended equipment and temperature limitations.
 - 7. Curing requirements and instructions.
- C. Submit color swatches.

- D. Submit certificate identifying the type and gradation of abrasives used for surface preparation.
- E. Submit material safety data sheets (MSDSs) for each coating.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM D2697—Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings.
 - 2. ASTM D3734—Standard Specification for High-Flash Aromatic Naphthas.
 - 3. ASTM D4060—Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
 - 4. ASTM D4138—Standard Practices for Measurement of Dry Film Thickness of Protective Coating Systems by Destructive, Cross-Sectioning Means.
 - 5. ASTM D4258—Standard Practice for Surface Cleaning Concrete for Coating.
 - 6. ASTM D4260—Standard Practice for Liquid and Gelled Acid Etching of Concrete.
 - 7. ASTM D4261—Standard Practice for Surface Cleaning Concrete Unit Masonry for Coating.
 - 8. ASTM D4263—Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
 - 9. ASTM D4787—Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates.
 - 10. ASTM D7091—Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals.

B. National Association of Corrosion Engineers International (NACE)

1. NACE SP0188—Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates.

C. Steel Structure Painting Council (SSPC)

1. SSPC PA-2—Measurement of Dry Coating Thickness with Magnetic Gauges.
2. SSPC SP-1—Solvent Cleaning.
3. SSPC SP-2—Hand Tool Cleaning.
4. SSPC SP-3—Power Tool Cleaning.
5. SSPC SP-5—White Metal Blast Cleaning.
6. SSPC SP-6—Commercial Blast Cleaning.
7. SSPC SP-7—Brush-Off Blast Cleaning.
8. SSPC SP-10—Near-White Blast Cleaning.
9. SSPC SP-11—Power Tool Cleaning to Bare Metal.
10. SSPC SP-13—Surface Preparation of Concrete.

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 TESTING REQUIREMENTS (NOT USED)

1.11 MOCK-UP (NOT USED)

1.12 PROJECT REQUIREMENTS (NOT USED)

PART 2 MATERIALS

2.01 PAINTING AND COATING SYSTEMS

The following index lists the various painting and coating systems by service and generic type:

PAINT COATINGS SYSTEM INDEX		
No.	Title	Generic Coating
Exposed Metal Coating Systems		
10.	Exposed Metal, Corrosive Environment	High-build epoxy (two-coat system) with polyurethane topcoat
Buried Metal Coating Systems		
21.	Buried Metal	Epoxy
24.	Buried Metal	Corrosion-resisting grease

These systems are specified in detail in the following Paragraphs. For each coating, the required surface preparation, prime coat, intermediate coat (if required), topcoat, and coating thicknesses are described. Mil thicknesses shown are minimum dry-film thicknesses.

A. Exposed Metal Coating Systems

1. System No. 10—Exposed Metal, Corrosive Environment:

- a. Type: High-build epoxy intermediate coat having a minimum volume solids of 60%, with an inorganic zinc prime coat and a pigmented polyurethane finish coat having a minimum volume solids of 52%.
- b. Service Conditions: For use with metal structures or pipes subjected to water condensation, chemical fumes such as hydrogen sulfide, salt spray, and chemical contact.
- c. Surface Preparation: Solvent clean per SSPC-SP1 to remove contaminants from the surface. Abrasive blast per SSPC-SP-10, Near White Metal Blast Cleaning.
- d. Prime Coat: Self-curing, two-component inorganic zinc-rich coating recommended by the manufacturer for overcoating with a high-build epoxy finish coat. Minimum zinc content shall be 12 pounds per gallon. Apply to a thickness of 3 mils. Products: Tnemec Series 90-97; Devoe Catha-Coat 304 or 304V; International Interzinc 180HS; Ameron 9HS; Carboline 11 HS; Sherwin-Williams Zinc-Clad II Plus, B69VZ12/B69VZ13/B69D11 at 2.5 to 4.0 mils DFT; PPG METALHIDE® 28 Inorganic Zinc-Rich Primer 97 – 672, or equal.

- e. Intermediate Coat: Tnemec Series 104; ICI Devoe Devran 224 HS; International Interguard 760HS; Ameron 385; Carboline 888 or 890; Sherwin-Williams Macropoxy 646 B58-600/B58V600 at 4.0 to 8.0 mils DFT; PPG PITT-GUARD® Direct-to-Rust Epoxy Mastic Coating 97-145 Series, or equal; 5 mils. Film thickness 5.0 to 8.0 mils/coat. Minimum solids by volume should be 82%.
- f. Finish Coat: Two-component pigmented acrylic or aliphatic polyurethane, minimum 70% sbv recommended by the manufacturer for overcoating a high-build epoxy coating. Apply to a thickness of at least 2 mils. Products: Tnemec Series 1075; ICI Devoe Devthane 379; International Interline 990HS; Ameron 450 HS; Carboline 134 HG; Sherwin-Williams Hi-Solids Polyurethane B65-300 Series/B60V30 at 2.5 to 4.0 mils DFT; PPG PITTHANE® Ultra-Gloss Urethane Enamel 95-812 Series; or equal.

B. Buried Metal Coating Systems

1. System No. 21—Buried Metal:

- a. Type: High solids Cycloaliphatic Amine epoxy or phenolic epoxy having minimum volume solids of 80% (ASTM D2697).
- b. Service Conditions: Buried metal, such as valves, flanges, bolts, nuts, structural steel, and fittings.
- c. Surface Preparation: Solvent clean per SSPC-SP1 to remove contaminants from the surface. Abrasive blast per SSPC-SP-10, Near White Metal Blast Cleaning.
- d. Coating System: Apply three or more coats of Ameron 400; Tnemec 104 HS (6.0 to 8.0 mils per coat); ICI Devoe Bar-Rust 233H; Carboline 890LT; Sherwin-Williams Tank Clad HS B62-80 Series/B60V80 Series at 5.0 to 8.0 mils/coat or equal; 30 mils total. Maximum thickness of an individual coating shall not exceed the manufacturer's recommendation.

2. System No. 24—Buried Metal:

- a. Type: Corrosion-resisting grease.
- b. Service Conditions: Buried metal, such as bolts, bolt threads, tie rods, and nuts.
- c. Surface Preparation: Solvent clean per SSPC-SP1 to remove contaminants from the surface. Power Tool Clean per SSPC-SP3 as a minimum. Abrasive blasting per SSPC-SP-6, Commercial Blast Cleaning is preferred.

- d. Coating: NO-OX-ID GG-2 as manufactured by Sanchem, Inc.
Apply to a minimum thickness of 1/4 inch.

C. Abrasives for Surface Preparation

- 1. Abrasives used for preparation of ferrous (excluding stainless steel) surfaces shall be one of the following:
 - a. 16- to 30- or 16- to 40-mesh silica sand or mineral grit.
 - b. 20- to 40-mesh garnet.
 - c. Crushed iron slag, 100% retained on No. 80 mesh.
 - d. SAE Grade G-40 or G-50 iron or steel grit.
- 2. Abrasives used for preparation of concrete and masonry surfaces shall be 16- to 30- or 16- to 40-mesh silica sand.
- 3. In the above gradations, 100% of the material shall pass through the first stated sieve size and 100% shall be retained on the second stated sieve size.

PART 3 EXECUTION

3.01 WEATHER CONDITIONS

- A. Do not paint in the rain, wind, snow, mist, or fog or when steel or metal surface temperatures are less than 5°F above the dew point.
- B. Do not apply paint when the relative humidity is above manufacturer's recommendation.
- C. Do not paint when temperature of metal to be painted is above 120°F.
- D. Do not apply alkyd, inorganic zinc, silicone aluminum, or silicone acrylic paints if air or surface temperature is below 40°F or expected to be below 40°F within 24 hours.
- E. Do not apply epoxy, acrylic latex, and polyurethane paints on an exterior or interior surface if air or surface temperature is below 60°F or expected to drop below 60°F in 24 hours.

3.02 SURFACE PREPARATION PROCEDURES

- A. Remove oil and grease from metal surfaces in accordance with SSPC SP-1. Use clean cloths and cleaning solvents and wipe dry with clean cloths. Do not leave a film or greasy residue on the cleaned surfaces before abrasive blasting. Powerwashing with a biodegradable degreaser is also acceptable.
- B. Remove weld spatter and weld slag from metal surfaces and grind smoothly rough welds, beads, peaked corners, and sharp edges including erection lugs in accordance with SSPC SP-2 and SSPC SP-3. Grind 0.020 inch (minimum) off the weld caps on pipe weld seams. Grind outside sharp corners, such as the outside edges of flanges, to a minimum radius of 1/4 inch.
- C. Do not abrasive blast or prepare more surface area in one day than can be coated in one day; prepare surfaces and apply coatings the same day. Remove sharp edges, burrs, and weld spatter. Prime all areas before rust bloom forms and within the same day.
- D. Do not abrasive blast PVC, CPVC, or FRP piping or equipment. Do not abrasive blast epoxy- or enamel-coated pipe that has already been factory coated, except to repair scratched or damaged coatings.
- E. For carbon steel, do not touch the surface between the time of abrasive blasting and the time the coating is applied. Apply coatings within 2 hours of blasting or before any rust bloom forms.
- F. Surface preparation shall conform to the SSPC specifications as follows:

Solvent Cleaning	SP-1
Hand Tool Cleaning	SP-2
Power Tool Cleaning	SP-3
White Metal Blast Cleaning	SP-5
Commercial Blast Cleaning	SP-6
Brush-Off Blast Cleaning	SP-7
Pickling	SP-8
Near-White Blast Cleaning	SP-10
Power Tool Cleaning to Bare Metal	SP-11
Surface Preparation and Cleaning of Steel and Other Hard Materials by High- and Ultrahigh-Pressure Water Jetting Before Recoating	SP-12

- G. Wherever the words “solvent cleaning,” “hand tool cleaning,” “wire brushing,” or “blast cleaning” or similar words are used in these Specifications or in the paint manufacturer’s specifications, they shall be understood to refer to the applicable SSPC (Steel Structure Painting Council), surface preparation specifications listed above.
- H. *Dust blasting* is defined as cleaning the surface through the use of very fine abrasives, such as siliceous or mineral abrasives, 80 to 100 mesh. Apply a fine etch to the metal surface to clean the surface of any contamination or oxide and to provide a surface profile for the coating.
- I. *Brush-off blasting* of concrete and masonry surfaces is defined as opening subsurface holes and voids and etching the surface for a coating to bond.
- J. For carbon steel surfaces, after abrasive blast cleaning, the height of the surface profile shall be 2 to 3 mils. Verify the surface profile by measuring with an impresser tape acceptable to the Owner’s Representative. Perform a minimum of one test per 100 square feet of surface area. Testing shall be witnessed by the Owner’s Representative. The impresser tape used in the test shall be permanently marked with the date, time, and locations where the test was made. Test results shall be promptly presented to the Owner’s Representative.
- K. Do not apply any part of a coating system before the Owner’s Representative has reviewed the surface preparation. If coating has been applied without this review, if directed by the Owner’s Representative, remove the applied coating by abrasive blasting and reapply the coat in accordance with this Specification.

3.03 ABRASIVE BLAST CLEANING

- A. Use dry abrasive blast cleaning for metal surfaces. Do not use abrasives in automatic equipment that have become contaminated. When shop or field blast cleaning with handheld nozzles, do not recycle or reuse blast particles.
- B. After abrasive blast cleaning and before coating is applied, dry clean surfaces to be coated by dusting, sweeping, and vacuuming to remove residue from blasting. Apply the specified primer or touch-up coating within an 8-hour working day. Do not apply coating over damp or moist surfaces. Reclean any blast-cleaned surface not coated within the 8-hour period before applying primer or touch-up coating.
- C. Keep the area of the work in a clean condition and do not permit blasting particles to accumulate and constitute a nuisance or hazard.

- D. During abrasive blast cleaning, prevent damage to adjacent coatings. Schedule blast cleaning and coating so that dust, dirt, blast particles, old coatings, rust, mill scale, etc., will not damage or fall upon wet or newly coated surfaces.

3.04 PROCEDURES FOR ITEMS HAVING SHOP-APPLIED PRIME COATS

- A. After applying primer to surfaces, allow coating to cure for a minimum of 2 hours before handling to minimize damage.
- B. When loading for shipment to the project site, use spacers and other protective devices to separate items to prevent damaging the shop-primed surfaces during transit and unloading. If wood spacers are used, remove wood splinters and particles from the shop-primed surfaces after separation. Use padded chains or ribbon binders to secure the loaded items and minimize damage to the shop-primed surfaces.
- C. Cover shop-primed items 100% with protective coverings or tarpaulins to prevent deposition of road salts, fuel residue, and other contaminants in transit.
- D. Handle shop-primed items with care during unloading, installation, and erection operations to minimize damage. Do not place or store shop-primed items on the ground or on top of other work unless the ground or work is covered with a protective covering or tarpaulin. Place shop-primed items above the ground upon platforms, skids, or other supports.

3.05 FIELD TOUCH-UP OF SHOP-APPLIED PRIME COATS

- A. Remove oil and grease surface contaminants on metal surfaces in accordance with SSPC SP-1. Use clean rags wetted with a degreasing solution, rinse with clean water, and wipe dry.
- B. Remove dust, dirt, salts, moisture, chalking primers, or other surface contaminants that will affect the adhesion or durability of the coating system. Use a high-pressure water blaster or scrub surfaces with a broom or brush wetted with a solution of Trisodium Phosphate, detergent, and water. Before applying intermediate or finish coats to inorganic zinc primers, remove any soluble zinc salts that have formed by scrubbing with a stiff bristle brush. Rinse scrubbed surfaces with clean water.
- C. Remove loose or peeling primer and other surface contaminants not easily removed by the previous cleaning methods in accordance with SSPC SP-7. Take care that the remaining primers are not damaged by the blast cleaning operation.

The remaining primers shall be firmly bonded to the steel surfaces with blast-cleaned edges feathered.

- D. Remove rust, scaling, or primer damaged by welding or during shipment, storage, and erection in accordance with SSPC SP-10. Take care that the remaining primers are not damaged by the blast cleaning operation. Areas smaller than 1 square inch may be prepared in accordance with SSPC SP-11. The remaining primers shall be firmly bonded to the steel surfaces with cleaned edges feathered.
- E. Use repair procedures on damaged primer that protect adjacent primer. Blast cleaning may require the use of lower air pressure, smaller nozzles and abrasive particle sizes, short blast nozzle distance from surface, shielding, and/or masking.
- F. After abrasive blast cleaning of damaged and defective areas, remove dust, blast particles, and other debris by dusting, sweeping, and vacuuming; then apply the specified touch-up coating.
- G. Other surfaces that are shop primed shall receive a field touch-up of the same primer used in the original prime coat.

3.06 PAINTING SYSTEMS

- A. All materials of a specified painting system, including primer, intermediate coats, and finish coats, shall be produced by the same manufacturer. Thinners, cleaners, driers, and other additives shall be as recommended by the paint manufacturer for the particular coating system.
- B. Deliver paints to the jobsite in the original, unopened containers.

3.07 PAINT STORAGE AND MIXING

- A. Store and mix materials only in areas designated for that purpose by the Owner's Representative. The area shall be well ventilated, with precautionary measures taken to prevent fire hazards. Post "No Smoking" signs. Storage and mixing areas shall be clean and free of rags, waste, and scrapings. Tightly close containers after each use. Store paint at an ambient temperature from 50°F to 100°F.
- B. Prepare multiple-component coatings using all of the contents of the container for each component as packaged by the paint manufacturer. Do not use partial batches. Do not use multiple-component coatings that have been mixed beyond their pot life. Provide small quantity kits for touch-up painting and for painting other small areas. Mix only the components specified and furnished by the paint

manufacturer. Do not intermix additional components for reasons of color or otherwise, even within the same generic type of coating.

3.08 PROCEDURES FOR THE APPLICATION OF COATINGS

- A. Conform to the requirements of SSPC PA-1. Follow the recommendations of the coating manufacturer, including the selection of spray equipment, brushes, rollers, cleaners, thinners, mixing, drying time, temperature and humidity of application, and safety precautions.
- B. Stir, strain, and keep coating materials at a uniform consistency during application. Power mix components. For multiple component materials, premix each component before combining. Apply each coating evenly, free of brush marks, sags, runs, and other evidence of poor workmanship. Use a different shade or tint on succeeding coating applications to indicate coverage where possible. Finished surfaces shall be free from defects or blemishes.
- C. Do not use thinners unless recommended by the coating manufacturer. If thinning is allowed, do not exceed the maximum allowable amount of thinner per gallon of coating material. Stir coating materials at all times when adding thinner. Do not reduce coating materials more than is absolutely necessary to obtain the proper application characteristics and to obtain the specified dry-film thicknesses.
- D. Remove dust, blast particles, and other debris from blast cleaned surfaces by dusting, sweeping, and vacuuming. Allow ventilator fans to clean airborne dust to provide good visibility in working area before applying coating. Remove dust from coated surfaces by dusting, sweeping, and vacuuming before applying succeeding coats.
- E. Apply coating systems to the specified minimum dry-film thicknesses as determined in accordance with SSPC PA-2.
- F. Apply primer immediately after blast cleaning and before any surface rusting occurs, or any dust, dirt, or any foreign matter has accumulated. Before applying coating, re-clean surfaces that have surface colored or become moist by blast cleaning.
- G. Apply a brush coat of primer on welds, sharp edges, nuts, bolts, and irregular surfaces before applying the primer and finish coat. Apply the brush coat before and in conjunction with the spray coat application. Apply the spray coat over the brush coat.

- H. Before applying subsequent coats, allow the primer and intermediate coats to dry for the minimum curing time recommended by the manufacturer. In no case shall the time between coats exceed the manufacturer's recommendation.
- I. Each coat shall cover the surface of the preceding coat completely and there shall be a visually perceptible difference in applied shade or tint of colors.
- J. Applied coating systems shall be cured at 75°F or higher for 48 hours. If temperature is lower than 75°F, curing time shall be in accordance with printed recommendations of the manufacturer, unless otherwise allowed by the Owner's Representative.
- K. Assembled parts shall be disassembled sufficiently before painting or coating to ensure complete coverage by the required coating.

3.09 SURFACES NOT TO BE COATED

- A. Do not paint the surfaces listed below unless otherwise noted in the drawings or in other Specification sections. Protect the following surfaces during the painting of adjacent areas:
 - 1. Concrete walkways.
 - 2. Mortar-coated pipe and fittings.
 - 3. Stainless steel.
 - 4. Metal letters.
 - 5. Glass.
 - 6. Roofing.
 - 7. Fencing.
 - 8. Copper tubing, red brass piping, and PVC piping except where such piping occurs in rooms where the walls are painted, or required for color coding.
 - 9. Electrical fixtures except for factory coatings.
 - 10. Nameplates.
 - 11. Grease fittings.
 - 12. Brass and copper, submerged.
 - 13. Buried pipe, unless specifically required in the piping specifications.
 - 14. Fiberglass items, unless specifically required in the FRP specifications.
 - 15. Aluminum handrail, stairs, and grating.
 - 16. Insulated pipe.

3.10 PROTECTION OF SURFACES NOT TO BE PAINTED

- A. Remove, mask, or otherwise protect hardware, lighting fixtures, switch plates, aluminum surfaces, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not intended to be painted. Provide drop cloths to prevent paint materials from falling on or marring adjacent surfaces. Protect working parts of mechanical and electrical equipment from damage during surface preparation and painting process. Mask openings in motors to prevent paint and other materials from entering the motors.

3.11 SURFACES TO BE COATED

- A. The exact coating to be applied in any location is not designated by the descriptive phrases in the coating system titles such as “corrosive environment,” “buried metal,” or “submerged metal.” Coat surfaces with the specific coating systems as described below:
 - 1. Coat valves as described the same as the adjacent piping. Aboveground valves, or valves in vaults and structures, shall match the color of the connecting piping.
 - 2. Coat buried flanges, nuts and bolts, valves, flexible pipe couplings, exposed rebar in thrust blocks, and valve boxes as specified in System No. 21. Coat buried bolt threads, tie bolt threads, and nuts as specified in System No. 24.

3.12 DRY-FILM THICKNESS TESTING

- A. Measure coating thickness specified for carbon steel surfaces with a magnetic-type dry-film thickness gauge in accordance with SSPC PA-2. Provide certification that the gauge has been calibrated by a certified laboratory within the past 6 months. Provide dry-film thickness gauge as manufactured by Mikrotest or Elcometer.
- B. Test the finish coat of metal surfaces (except zinc primer and galvanizing) for holidays and discontinuities with an electrical holiday detector, low-voltage, wet-sponge type. Provide measuring equipment. Provide certification that the gauge has been calibrated by a certified laboratory within the past 6 months. Provide detector as manufactured by Tinker and Rasor or K-D Bird Dog.
- C. Check each coat for the correct dry-film thickness. Do not measure within 8 hours after application of the coating.

- D. For metal surfaces, make five separate spot measurements (average of three readings) spaced evenly over each 100 square feet of area (or fraction thereof) to be measured. Make three readings for each spot measurement of either the substrate or the paint. Move the probe or detector a distance of 1 to 3 inches for each new gauge reading. Discard any unusually high or low reading that cannot be repeated consistently. Take the average (mean) of the three readings as the spot measurement. The average of five spot measurements for each such 100-square-foot area shall not be less than the specified thickness. No single spot measurement in any 100-square-foot area shall be less than 80% nor more than 120% of the specified thickness. One of three readings which are averaged to produce each spot measurement may underrun by a greater amount as defined by SSPC PA-2.
- E. For concrete surfaces, make five separate spot measurements spaced evenly over each 100 square feet of area (or fraction thereof) to be measured. The average of five spot measurements for each such 100-square-foot area shall not be less than the specified thickness. No single spot measurement in any 100-square-foot area shall be less than 80% nor more than 120% of the specified thickness.
- F. Perform tests in the presence of the Owner's Representative.

3.13 REPAIR OF IMPROPERLY COATED SURFACES

- A. If the item has an improper finish color or insufficient film thickness, clean and topcoat the surface with the specified paint material to obtain the specified color and coverage. Sandblast or power-sand visible areas of chipped, peeled, or abraded paint, feathering the edges. Then prime and finish the coat in accordance with the Specifications. The work shall be free of runs, bridges, shiners, laps, or other imperfections.

3.14 CLEANING

- A. During the work, remove discarded materials, rubbish, cans, and rags at the end of each day's work.
- B. Thoroughly clean brushes and other application equipment at the end of each period of use and when changing to another paint or color.
- C. Upon completion of painting work, remove masking tape, tarps, and other protective materials, using care not to damage finished surfaces.

END OF SECTION

DIVISION 15
MECHANICAL

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SECTION 15055
PIPING SYSTEMS—GENERAL

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Specification describes responsibilities and requirements for Piping Systems including the following:
 - 1. Labor, materials, tools, equipment, and services to be furnished in accordance with the provisions of the Contract Documents. The materials to be used for the piping systems shown in the Drawings are listed by service in the Piping Schedule, included in the Contract Drawings.
 - 2. Coordination of work with other trades.
 - 3. Furnishing and installing all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a sound, secure, and complete installation, although such work is not specifically indicated.
 - 4. Furnishing Record Drawings and documents for piping systems.

1.02 RELATED WORK

- A. Section 01300, Contract Administration.
- B. Section 01330, Submittals and Acceptance.
- C. Section 01650, Delivery, Storage, and Handling.
- D. Section 09900, Painting and Coating.
- E. Section 15148, Fusible Polyvinylchloride Water Mains and Appurtenances.
- F. Section 15291, Polyvinyl Chloride (PVC) Pressure Pipe and Fittings.

1.03 SUBMITTALS

The Contractor shall submit the following in accordance with Section 01330, Submittals and Acceptance:

- A. If the Contractor deviates from the piping layout as shown on the Contract Drawings, the Contractor shall submit scaled piping drawings showing locations and dimensions to and from fittings, valves, tanks, equipment, structures, and related appurtenances. Provide scaled drawings to a minimum scale of 1 inch equals 10 feet. Provide details to minimum scale of 1/8 inch equals 1 foot. Elevations shall correspond to reference vertical elevation datum shown or provided for this project.

- B. Copies of any manufacturer's written directions regarding material handling, delivery, storage, and installation.
- C. Record piping Drawings shall meet the requirements of Section 01300, Contract Administration, and Section 01785, Record Documents. During the work, the Contractor shall maintain accurate, up-to-date Record Drawings of piping systems installed in the project, including pre-existing piping discovered, relocated, or at locations other than as originally shown on the Drawings. When the work is completed and accepted by the Owner and the Engineer, the Contractor shall submit Record Drawings in accordance with Section 01785, Record Documents. The Contractor shall identify complete location, elevations, and description of piping systems. Piping systems and fittings are to be identified from three points on structures and/or stationary appurtenances.
- D. Submit copies of forms documenting required field pressure testing work and results.
- E. Submit welding certificate copies.
- F. Submit certified copies of mill test reports for bolts and nuts, including coatings if specified. Provide recertification by an independent domestic testing laboratory for materials originating outside of the United States.
- G. Submit manufacturer's data sheet for gaskets supplied showing dimensions and bolting recommendations.
- H. Support Systems:
 - 1. Drawings of each piping system locating each support, guide, and anchor.
 - 2. Identify support, guide, and anchor type by catalog number and shop/Contract Drawing detail number.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

- A. American National Standards Institute (ANSI)
 - 1. ANSI A21.11—Rubber Gasket Joints for Cast Iron and Ductile Pressure Pipe and Fittings.
 - 2. ANSI B1.1—Unified Inch Screw Threads.
 - 3. ANSI B2.1—Pipe Threads.
 - 4. ANSI B16.21—Nonmetallic Gaskets for Pipe Flanges.
 - 5. ANSI B18.2.1—Square and Hex Bolts and Screws, Including Askew Head Bolts, Hex Cap Screws, and Lag Screws.
 - 6. ANSI B18.2.2—Square and Hex Nuts.
 - 7. ANSI B31.3—Process Piping.
- B. American Society of Mechanical Engineers (ASME)
 - 1. ASME B31.1—Power Piping (Pressure Piping).
 - 2. ASME Boiler and Pressure Vessel Code.
- C. American Society for Testing and Materials (ASTM)
 - 1. ASTM A183—Specification for Carbon Steel Track Bolts and Nuts.
 - 2. ASTM A193—Standard Specification for Alloy-Steel; and Stainless Steel Bolting Materials for High Temperature or High Pressure Service and other Special Purpose Applications.
 - 3. ASTM A194—Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service.
 - 4. ASTM A307—Specification for Carbon Steel Externally Threaded Standard Fasteners.
 - 5. ASTM D1330—Standard Specification for Rubber Sheet Gaskets.
 - 6. ASTM F467—Standard Specification for Nonferrous Nuts for General Use.
- D. American Water Works Association (AWWA)
 - 1. AWWA C207—Steel Pipe Flanges for Waterworks Service-Sizes 4-Inch through 144-Inch.
- E. Manufacturers Standardization Society of the Valve and Fittings Industry (MSS)
 - 1. MSS SP 58—Pipe Hangers and Supports – Material, Design, and Manufacture.
- F. NSF International (NSF)
 - 1. NSF 61—Drinking Water System Components – Health Effects.

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.
- B. The Contractor shall protect the pipe from kinks, cuts, end damage, and other defects when transporting all piping. Binding and tie-down methods shall not damage or deflect the pipes in any way. Pipe damaged during shipment shall be rejected.
- C. Pipe shall be stored on level ground, preferably turf or sand, free of sharp objects that could damage the pipe. Stacking of any pipe shall be limited to a height that will not cause excessive deformation of the lower layers of pipe under anticipated temperature conditions. When necessary due to ground conditions, the pipe shall be stored on wooden sleepers, spaced suitably and of such widths to not allow deformation of the pipe at the point of contact with the sleeper or between supports. Pipe shall not be removed from storage until bedding or sub-grade work is complete and ready to receive the pipe.
- D. The joined pipe shall be handled in such a manner that the pipe is not damaged by dragging it over sharp and cutting objects. Ropes, fabric, or rubber-protected slings and straps shall be used when handling pipe. Chains, cables, or hooks inserted into the pipe ends shall not be used. Two slings spread apart shall be used for lifting each length of pipe. Pipe or fittings shall not be dropped. Slings for handling joined pipe shall not be positioned at socket-welded joints. Sections of the pipes with cuts and gouges shall be removed and the ends of the pipe rejoined. In accordance with the pipe manufacturer's written instructions, the Contractor shall repair all pipe with damaged linings and pipe exterior coatings that have been damaged before the pipe is installed.
- E. The Contractor shall cover all pipe stored on the site with canvas or other opaque material to protect it from sunlight. Provide air circulation under the covering.
- F. The Contractor shall inspect all pipe, fittings, and other accessories upon delivery and during the work. Any defective or damaged materials found during field

inspection or during tests shall be removed from the site and replaced by, and at the expense of, the Contractor.

- G. The interior of all pipe, fittings, and other accessories shall be kept free from dirt and foreign matter at all times. Fittings shall be drained and stored in a manner that will protect them from damage by freezing.
- H. Gaskets shall be placed in a cool location out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-delivered-to-site and first-to-be-installed rotation basis. Mechanical-joint glands, bolts, and washers shall be handled and stored in a manner that will ensure proper use with respect to types and sizes.

1.09 QUALIFICATIONS (NOT USED)

1.10 TESTING REQUIREMENTS (NOT USED)

1.11 MAINTENANCE (NOT USED)

1.12 OPERATIONS AND MAINTENANCE (O&M) MANUALS (NOT USED)

1.13 DEFINITIONS OF BURIED, EXPOSED, AND SUBMERGED PIPING

- A. Buried piping is piping buried in soil, beneath a structure and/or encased in concrete. Where an exterior pipe coating is specified to be factory- or field-applied, the Contractor shall provide the coating up to the penetration of a structure. Piping encased in concrete does not require an exterior coating other than what is factory furnished.
- B. Exposed piping is piping in any of the following conditions or locations:
 - 1. Above ground.
 - 2. Inside buildings, vaults, or other structures.
 - 3. In underground concrete trenches or galleries.
- C. Submerged piping is considered to be all piping within a liquid holding tank.

1.14 SYSTEM DESIGN REQUIREMENTS

- A. General
 - 1. The Specifications and Drawings are not all inclusive of explicit piping details; provide piping for intended use in compliance with laws and regulations, including ASME B31.1 Code (Power Piping).

2. Pressure ratings and materials specified represent minimum acceptable standards for piping systems.
3. Piping Systems: Suitable for the services specified and intended.
4. Piping shall be color coded in accordance with the Department of Environmental Protection requirements.

B. Support Systems

1. The absence of pipe supports and details on the Drawings shall not relieve the Contractor of responsibility for sizing and providing supports for this project.
2. Select and design within the specified spans and component requirements.
3. Comply with requirements of MSS SP 58, Pipe Hangers and Supports – Materials, Design, and Manufacture.
4. Criteria for structural design and selection of pipe support system components:
 - a. Dead loads imposed by the weight of the pipes filled with water, within specified spans and component requirements, plus any insulation.
 - b. Safety factor: Minimum of 5.
5. Design, size, and space support anchoring devices, including anchor bolts, inserts, and other devices used to anchor the support, to withstand the shear and pullout loads imposed by loading and spacing on each particular support.
 - a. Piping smaller than 30 inches: Supports are shown only where specific types and locations are required; additional pipe supports may be required and are to be provided and installed by the Contractor at no additional cost to the Owner.

C. Adapters

1. No attempt has been made to show all adapters, spool pieces, reducers, bushings, or other fittings required to accommodate the connection of pipes, fittings, and valves of various joint design and sizes throughout the project. The Contractor is completely responsible for providing, at his expense, all adapters, reducers, sleeves, spool pieces, and other fittings and appurtenances necessary for connection of pipe (for the same pipe material of or a transition of pipe materials), valves, fittings, and appurtenances

throughout the project, which shall be constructed of appropriate materials, coated and lined to match the materials, coatings, and linings specified for the connected components. All adapters, reducers, sleeves, spool pieces, and other fittings shall be coated and lined in accordance with the specifications for each individual pipe system.

D. Unions

1. No attempt has been made to show all unions required for the project. The Contractor shall provide unions at all connections of threaded pipe to installed equipment unless deleted by the Engineer, in writing, at certain locations. The unions shall meet or exceed the quality of materials, pressure rating, service, and painting requirements of connected piping.

PART 2 PRODUCTS

2.01 PIPING SYSTEM GENERAL REQUIREMENTS SCHEDULE

- A. Unless noted otherwise in the Drawings, piping system materials, fittings, and appurtenances are subject to requirements of the individual Specifications for the piping systems.

2.02 PIPING SCHEDULE (NOT USED)

2.03 THREAD FORMING FOR STAINLESS STEEL BOLTS

- A. Form threads for stainless steel bolts by rolling, not by cutting or grinding.

2.04 BOLTS AND NUTS FOR FLANGES FOR DUCTILE IRON PIPE FLANGES

- A. Bolts, washers, and nuts for pipe installed indoors, outdoors above and below ground, and in vaults and structures shall be as specified in Section 15155, Ductile Iron Fittings.
- B. Bolts, washers, and nuts for submerged Class 150 flanges shall be Type 304 stainless steel conforming to ASTM A193 (Grade B8) for bolts and ASTM A194 (Grade 8) for nuts. Fit shall be Class 2A conforming to ANSI B1.1 when connecting to cast-iron valves having body bolt holes.

2.05 BOLTS AND NUTS FOR PVC, CPVC, AND PVDF PIPE FLANGES

- A. Bolts for piping in sodium hypochlorite service shall be made of titanium, in accordance with ASTM F467, Grade Ti1, Ti2, or Ti7. Nuts and washers shall conform to ASTM F467 and shall be made of titanium.

- B. Bolts, washers, and nuts in chemical service other than sodium hypochlorite shall be Type 304 stainless steel conforming to ASTM A193, Grade B8, for bolts and ASTM A194, Grade 8, for nuts.
- C. Bolts, washers, and nuts for buried and submerged flanges and flanges located outdoors above ground or in vaults and structures shall be Type 304 stainless steel conforming to ASTM A193, Grade B8, for bolts and ASTM A194, Grade 8, for nuts.
- D. The Contractor shall provide a washer under each nut and under each bolt head. Washers shall be of the same material as the nuts.

2.06 LUBRICANT FOR STAINLESS STEEL BOLTS AND NUTS

- A. Anti-seize thread lubricant shall be applied to the thread portion of all (above grade and below grade) stainless steel bolts (stainless steel tie rods, etc.) during assembly. Anti-seize lubricant shall be chloride free and shall be nongalling NSF approved. Anti-seize thread lubricant shall be Jet-Lube “Nikal,” John Crane “Thred Gard Nickel,” Never-Seez “Pure Nickel Special,” or Permatex “Nickel Anti-Seize.”

2.07 FLANGE GASKETS FOR DUCTILE IRON PIPE (NOT USED)

2.08 FLANGE GASKETS FOR PVC AND CPVC PIPE

- A. Gaskets for flanged joints shall be full faced, 1/8-inch thick, having a Brinell Hardness of 50 to 70 durometer A. Gasket material shall be EPR unless noted or specified otherwise. Gaskets shall be compatible with the fluids conveyed.

2.09 POTABLE WATER PIPING SYSTEMS

- A. All potable water piping systems including pipe, valves, fittings, weld-solvents, linings, gaskets, lubricants, grout disinfection agents, and surfaces in contact with potable water shall meet all local and State of Florida regulations and requirements including NSF 61.

2.10 LOCATOR WIRE

- A. All 2-inch and larger buried piping shall be laid with two insulated, 12-gauge AWG, THWN strand copper wires taped with adhesive-backed tape or tied to the nonmetallic pipe at 5 feet on center for location purposes.

2.11 DETECTABLE PIPELINE MARKING TAPE

- A. All buried non-metallic piping shall be laid with underground detectable caution tape, 3-inch wide marking tape placed a minimum of 18-inches above the top of pipe.

PART 3 EXECUTION

3.01 PREPARATION

- A. Field Alignment
 - 1. The piping shown on the Contract Drawings is generally indicative of the work, with symbols and notations provided for clarity. However, the Contract Drawings are not an exact representation of all conditions involved; therefore, install piping to suit actual field conditions and measurements as approved by the Engineer. No extra compensation will be made for work due to differences between indicated and actual dimensions.
 - 2. The Contractor shall install all adapters, fittings, flanged connections, closures, restrained joints, etc. not specified but necessary for a complete installation acceptable to the Engineer.
 - 3. The Contract Drawings do not indicate all adapters, fittings, spool pieces, bushings, unions, supports, hangers, and other items required to accommodate the installing and connecting of pipe, fittings, valves, and equipment of various joint designs and sizes. Provide such required items of appropriate designs, materials, coatings, and linings.

3.02 FIELD LAYOUT AND MODIFICATIONS

- A. Unless directed otherwise, the Contractor shall be responsible for setting construction layout stakes and/or offsets required to complete the designated work. The Contractor shall ensure that those stakes and/or offsets are protected and any re-staking required for any reason including work stoppage shall be included in the bid price and no additional compensation to the Contractor will be made.
- B. The Engineer has the right to make any modifications the Engineer deems necessary due to field conditions, conflicts with other utilities, or to protect other properties.

3.03 PIPE PRODUCTS INSPECTION

- A. The Contractor shall obtain from the pipe manufacturer a certificate of inspection to the effect that the pipe, fittings, gaskets, glands, bolts, and nuts supplied for this Contract have been inspected at the plant and that they meet the requirements of these specifications. The Contractor shall submit these certificates to the Engineer before installing the pipe materials. The Contractor shall visually inspect all pipe and fittings at delivery and before they are lowered into the trench to be installed. Pipe or fittings that do not conform to these Specifications or have been damaged in any manner will be rejected and the Contractor must remove them immediately. The entire product of any plant may be rejected when, in the opinion of the Engineer, the methods or quality assurance and uniformity of manufacturer fail to secure acceptable and uniform pipe products or where the materials used produce inferior pipe products.

3.04 CUT-IN TO EXISTING MAIN

- A. Before connecting to existing lines, the Contractor shall notify and coordinate all work with City personnel. The City shall be responsible for turning valves. The Contractor shall be responsible for tying into existing mains, under City supervision, during construction. Cut into and connect mains constructed under this Contract to existing mains at locations shown or as directed by the Engineer. Install cut-ins meeting conditions found in the field, with standard fittings as detailed or as directed by the Engineer. Provide sufficient fittings and operating equipment on the site before starting operations. Test, sterilize if a potable water main, and flush new lines as specified hereinafter and obtain approval of the Engineer before putting a connection to an existing line into service.

3.05 REMOVAL OF EXISTING PIPE AND FITTINGS

- A. Pipe specifically identified on the Drawings to be removed or replaced from service shall be physically taken out. The limits of pipe to be removed shall be specifically called for in the plans or shall be approved in writing by the Engineer. Any other removal not specifically called for shall be approved in writing and shall be considered incidental to construction of other items in the contract and the Contractor will not receive compensation for such work.
- B. When removing pipe, the Contractor shall excavate a trench wide enough to dislodge the pipe from the surrounding soil and long enough to be able to handle the pipe without causing any damage to nearby utilities, structures, or adjacent property.

- C. The removed pipe, fitting, and appurtenances will become the Contractor's property and the Contractor shall be responsible for proper disposal and any required permits for disposal.
- D. Regarding pipe remaining in the ground subsequent to removal of connected pipe or pipe fittings—the remaining buried pipes, openings, and fittings shall be plugged or capped as approved by the Engineer.
- E. Pipe that will be abandoned in place shall be plugged or capped as approved by the Engineer.

3.06 BURIED PIPING AND PIPE FITTINGS

- A. Trenching and backfilling for all pipe and fittings shall also be in accordance with Section 02305, Earthwork for Utilities.
- B. Installation
 - 1. Inspect all piping for defects and remove all lumps or excess coatings before installation. The inside of the mechanical joint and outside of plain-end pipe shall be cleaned before joining pipe. Caution shall be taken to prevent damage to the pipe during lowering into the trench. Remove all foreign matter that has entered the pipe during storage and installation. The Contractor shall cover the pipe ends during installation to prevent debris from entering the pipe. No debris, tools, clothing, or other material shall be placed in the pipe.
 - 2. After being placed in the trench, the pipe shall be brought to the proper line and grade by compacting the approved backfill material under it, except at the bell end. Joint deflection shall not exceed 75% of the manufacturer's limit.
 - 3. The Contractor shall install temporary water-tight plugs on the pipe ends during the time that the pipe is in the trench but no work is in progress. If there is water in the trench upon beginning work, this plug shall remain in place until the trench has been pumped dry, unless otherwise approved by the Engineer, the Engineer's Representative, or the Owner's Representative.
 - 4. Coat threaded portions of stainless steel bolts and nuts with lubricant before assembly.
 - 5. Restrained plugs or caps shall be inserted into all buried dead end pipes, tees, or crosses. Provide blind flanges for all flanged exposed piping. Restrained plugs and caps installed for pressure testing shall be fully secured and blocked to withstand the test pressure.
 - 6. Where plugging is required because of contract division or phasing for later connection, the ends of such lines shall be equipped with a suitable

ductile-iron plug/cap, as shown on the Drawings. Installation or removal of such plugging shall be considered incidental to the work and the Contractor shall not be compensated by the Owner for performing this work.

3.07 FLANGED JOINTS FOR EXPOSED PIPE AND FITTINGS

- A. When bolting flanged joints, the Contractor shall avoid restraint on the opposite end of the pipe or fitting, which would prevent uniform gasket compression or which would cause unnecessary stress in the flanges. One flange shall be free to move in any direction while the flange bolts are being tightened. Bolts shall be tightened gradually and at a uniform rate to ensure uniform compression of the gasket, in accordance with pipe and fitting manufacturer's recommendations.
- B. Coat threaded portions of stainless steel bolts and nuts with lubricant before assembly.

3.08 ANCHORING AND RESTRAINING

- A. Thrust blocks shall be used in new lines and shall be limited to areas in which a new fitting has been installed in an existing line and field restraining joints are not feasible or when directed by the Engineer.

3.09 FLUSHING, CLEANING, TESTING AND INSPECTION OF PIPING

- A. See Section 15144, Pressure Testing of Piping, for the requirements of pipe flushing, cleaning, pressure testing, and inspection.

3.10 PIPE COLOR CODING

- A. The pipe color shall be as identified on the Drawings. The Contractor shall coordinate with the Engineer and the Owner to generate a list of acceptable pipe colors for exposed-pipe-related appurtenances such as valve box covers. Where color-coding is achieved by painting exterior surfaces of appurtenances, painting shall be provided in accordance with Section 09900, Painting and Coating. On applicable pipe appurtenances, color shall be in accordance with FDEP color-coding requirements.

END OF SECTION

SECTION 15110
MANUAL, CHECK, AND PROCESS VALVES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment, and incidentals required, and install complete and ready for operation all valves as shown in the Drawings and as specified in this Section. All valves shall be complete with all necessary manual actuators, valve boxes, and extension stems, which are required for proper valve operation and completion of the work.
 - 1. All valves shall be of the sizes shown in the Drawings. All equipment of the same type shall be from one manufacturer, unless authorized in writing by the Engineer.
 - 2. The valves shall include but not be limited to the following:
 - a. Gate Valves.
 - b. Insertion-Type Valves.

1.02 RELATED WORK

- A. Section 01330, Submittals and Acceptance.
- B. Section 09900, Painting and Coating.
- C. Section 15055, Piping Systems—General.

1.03 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance:

- A. Product technical submittal data shall contain the following information and data:
 - 1. Acknowledgment that products submitted meet requirements of standards referenced.
 - 2. Manufacturer's installation instructions.
 - 3. Manufacturer's operation and maintenance manuals.

4. Data of valves, actuators, and accessories:
 - a. Pressure and temperature rating.
 - b. Materials of construction, with ASTM reference and grade.
 - c. Linings and coatings.
 - d. Dimensions and weight.
 - e. Flow coefficient.
 - f. Actuators and accessories details.
 - g. Manufacturer's product brochure, cut-sheets, and parts diagrams.
- B. Dimensions and orientation of valve actuators as installed on the valves. Show location of internal stops for gear actuators. State differential pressure and fluid velocity used to size actuators. For worm-gear actuators, state the radius of the gear sector in contact with the worm and state the handwheel diameter.
- C. The following test reports: Performance Tests; Leakage Tests; Hydrostatic Tests; and Proof-of-Design Tests as applicable or required.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

- A. American National Standard Institute (ANSI)
 1. ANSI A21.11—Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 2. ANSI B1.20.1—Pipe Threads, General Purpose (Inch).
 3. ANSI B1.20.7—Hose Coupling Screw Threads (Inch).
 4. ANSI B16.1—Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
 5. ANSI B16.5—Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard.
 6. ANSI B16.10—Face to Face and End-to-End Dimensions of Valves.
 7. ANSI B16.18—Cast Copper Alloy Solder Joint Pressure Fittings.
 8. ANSI B16.34—Valves Flanged, Threaded and Welding End.
 9. ANSI B16.42—Ductile-Iron Pipe Flanges and Flanged Fittings, Classes 150 and 300.
 10. ANSI B16.47—Large Diameter Steel Flanges: NPS 26 through NPS 60.
 11. ANSI B16.104—Control Valve Seat Leakage.

12. ANSI B36.10—Welded and Seamless Wrought Steel Pipe.
13. ANSI B93.10—Static Pressure Rating Methods of Square Head Fluid Power Cylinders Part 1: Pressure Containing Components.
14. ANSI B93.15—Mounting Dimensions for Square Head Industrial Fluid Power Cylinders.
15. ANSI/NSF 61—Drinking Water System Components – Health Effects.

B. American Petroleum Institute (API)

1. API 6D—Pipeline Valves (Steel Gate, Plug, Ball, and Check Valves).
2. API 6FA—Specification for Fire Test for Valves.
3. API 594—Check Valves: Flanged, Lug, Wafer and Butt-Welding.
4. API 607—Testing of Valves – Fire Type-Testing Requirements.

C. American Society for Testing of Materials (ASTM)

1. ASTM A36—Standard Specification for Carbon Structural Steel.
2. ASTM A47—Standard Specification for Ferritic Malleable Iron Castings.
3. ASTM A48—Standard Specification for Gray Iron Castings.
4. ASTM A105—Standard Specification for Carbon-Steel Forgings for Piping Applications.
5. ASTM A108—Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
6. ASTM A126—Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
7. ASTM A148—Standard Specification for Steel Castings, High Strength, for Structural Purposes.
8. ASTM A181—Standard Specification for Carbon-Steel Forgings, for General-Purpose Piping.
9. ASTM A182—Standard Specification for Forged or Rolled Alloy and Stainless-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service.
10. ASTM A193—Standard Specification for Alloy-Steel and Stainless-Steel Bolting Materials for High-Temperature or High Pressure Service and Other Special Purpose Applications.
11. ASTM A194—Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High-Temperature Service, or Both.
12. ASTM A216—Standard Specification for Steel Castings, Carbon, Suitable for Fusion-Welding, for High-Temperature Service.
13. ASTM A240—Standard Specification for Chromium and Chromium-Nickel Stainless-Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
14. ASTM A269—Standard Specification for Seamless and Welded Austenitic Stainless-Steel Tubing for General Purpose.

15. ASTM A276—Standard Specification for Stainless-Steel Bars and Shapes.
16. ASTM A313—Standard Specification for Stainless-Steel Spring Wire.
17. ASTM A322—Standard Specification for Steel Bars, Alloy, Standard Grades.
18. ASTM A351—Standard Specification for Castings, Austenitic, for Pressure-Containing Parts.
19. ASTM A395—Standard Specification for Ferritic Ductile-Iron Pressure-Retaining Castings for Use at Elevated Temperatures.
20. ASTM A436—Standard Specification for Austenitic Gray Iron Castings.
21. ASTM A439—Standard Specification for Austenitic Ductile-Iron Castings.
22. ASTM A449—Standard Specification for Hex Cap Screws, Bolts and Studs, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use.
23. ASTM A276—Standard Specification for Stainless-Steel Bars and Shapes.
24. ASTM A479—Standard Specification for Stainless-Steel Bars and Shapes for Use in Boilers and Other Pressure Vessels.
25. ASTM A494—Standard Specification for Castings, Nickel and Nickel Alloy.
26. ASTM A516—Standard Specification for Pressure Vessel Plates, Carbon-Steel, for Moderate- and Lower-Temperature Services.
27. ASTM A536—Standard Specification for Ductile-Iron Castings.
28. ASTM A564—Standard Specification for Hot-Rolled and Cold-Finished Age-Hardening Stainless-Steel Bars and Shapes.
29. ASTM A582—Standard Specification for Free-Machining Stainless-Steel Bars.
30. ASTM A666—Standard Specification for Annealed or Cold-Worked Austenitic Stainless-Steel Sheet, Strip, Plate, and Flat Bar.
31. ASTM A743—Standard Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application.
32. ASTM A744—Standard Specification for Castings, Iron-Chromium-Nickel, Corrosion Resistant, for Severe Service.
33. ASTM A890—Standard Specification for Castings, Iron-Chromium-Nickel-Molybdenum Corrosion-Resistant, Duplex (Austenitic/Ferritic) for General Application.
34. ASTM B16—Standard Specification for Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines.
35. ASTM B21—Standard Specification for Naval Brass Rod, Bar, and Shapes.
36. ASTM B61—Standard Specification for Steam or Valve Bronze Fittings.
37. ASTM B62—Standard Specification for Composition Bronze or Ounce Metal Castings.
38. ASTM B98—Standard Specification for Copper-Silicon Alloy Rod, Bar and Shapes.

39. ASTM B99—Standard Specification for Copper-Silicon Alloy Wire for General Applications.
40. ASTM B127—Standard Specification for Nickel-Copper Alloy (UNS N04400) Plate, Sheet, and Strip.
41. ASTM B148—Standard Specification for Aluminum-Bronze Sand Castings.
42. ASTM B150—Standard Specification for Aluminum Bronze Rod, Bar, and Shapes.
43. ASTM B164—Standard Specification for Nickel-Copper Alloy Rod, Bar, and Wire.
44. ASTM A169—Standard Specification for Aluminum Bronze Sheet, Strip, and Rolled Bar.
45. ASTM B193—Standard Test Method for Resistivity of Electrical Conductor Materials.
46. ASTM B371—Standard Specification for Copper-Zinc-Silicon Alloy Rod.
47. ASTM B427—Standard Specification for Gear Bronze Alloy Castings.
48. ASTM B446—Standard Specification for Nickel-Chromium-Molybdenum-Columbium Alloy (UNS N06625), Nickel-Chromium-Molybdenum-Silicon Alloy (UNS N06219), and Nickel-Chromium-Molybdenum-Tungsten Alloy (UNS N06650) Rod and Bar.
49. ASTM B443—Standard Specification for Nickel-Chromium-Molybdenum-Columbium Alloy (UNS N06625) and Nickel-Chromium-Molybdenum-Silicon Alloy (UNS N06219) Plate, Sheet, and Strip.
50. ASTM B462—Specification for Forged or Rolled UNS N06030, N06022, N06035, N06200, N06059, N06686, N06020, N06024, N06026, N08367, N10276, N10665, N10675, N10629, N08031, N06045, N06025, and R20033 Alloy Pipe Flanges, Forged Fittings, & Valves & Parts for Corrosive High-Temperature Service.
51. ASTM B463—Standard Specification for UNS N08020, UNS N08026, and UNS N08024 Alloy Plate, Sheet, and Strip.
52. ASTM B472—Standard Specification for Nickel Alloy Billets and Bars for Reforging.
53. ASTM B584—Standard Specification for Copper Alloy Sand Castings for General Applications.
54. ASTM B763—Standard Specification for Copper Alloy Sand Castings for Valve Applications.
55. ASTM D1248—Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable.
56. ASTM D2000—Standard Classification System for Rubber Products in Automotive Applications.
57. ASTM D4101—Standard Specification for Polypropylene Injection and Extrusion Materials.
58. ASTM F467—Standard Specification for Non-Ferrous Nuts for General Use.

59. ASTM F468—Standard Specification for Non-Ferrous Bolts, Hex Cap Screws, and Studs for General Use.

D. American Society of Mechanical Engineers (ASME)

1. ASME 16.5—Pipe Flanges and Flanged Fittings NPS 1/2 through NPS 24 Metric/Inch Standard.
2. ASME B16.11—Standards of Pipes and Fittings.
3. ASME B16.24—Cast Copper Alloy Pipe Flanges and Flanged Fittings Classes 150, 300, 400, 600, 900, 1500, and 2500.

E. American Society of Safety Engineers (ASSE)

1. ASSE 1011—Performance Requirements for Hose Connection Vacuum Breakers.

F. American Water Works Association (AWWA)

1. AWWA C110—Ductile-Iron and Gray-Iron Fittings for Water.
2. AWWA C111—Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
3. AWWA C115—Standard for Flanged Ductile-Iron Pipe with Threaded Flanges.
4. AWWA C207—Steel Pipe Flanges for Waterworks Service, Sizes 4-Inch through 144-Inch (100 mm through 3,600 mm).
5. AWWA C500—Metal-Seated Gate Valves for Water Supply Service.
6. AWWA C504—Rubber-Sealed Butterfly Valves.
7. AWWA C507—Ball Valves 6-Inch through 48-Inch (150 mm through 1200 mm).
8. AWWA C508—Swing-Check Valves for Waterworks Service, 2-Inch (50 mm) through 24-Inch (600 mm).
9. AWWA C509—Resilient-Seated Gate Valves for Water-Supply Service.
10. AWWA C111—Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
11. AWWA C512—Air Release, Air/Vacuum, and Combination Air Valves for Waterworks Service.
12. AWWA C515—Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service.
13. AWWA C550—Protective Epoxy Interior Coatings for Valves and Hydrants.
14. AWWA C606—Grooved and Shouldered Joints.
15. AWWA C800—Underground Service Line Valves and Fittings.

G. Fluid Controls Institute (FCI)

1. FCI 70-2—Control Valve Seat Leakage.

H. Manufacturers Standardization Society (MSS)

1. MSS SP-61—Pressure Testing of Steel Valves.
2. MSS SP-67—Butterfly Valves.
3. MSS SP-68—High Pressure Butterfly Valves with Offset Design.
4. MSS SP-81—Stainless-Steel, Bonnetless, Flanged Knife Gate Valves.
5. MSS SP-83—Class 3000 Steel Pipe Unions Socket Welding and Threaded.
6. MSS SP-108—Resilient-Seated Cast-Iron-Eccentric Plug Valves.

I. NACE International (NACE)

1. NACE MR-01—Materials Resistant to Sulfide Stress Cracking in Corrosive Petroleum Refining Environments.

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.
- B. All valves, unless otherwise directed, shall be loaded and unloaded by lifting, and under no circumstances shall valves be dropped, skidded, or rolled. Valves shall not be stacked or placed under pipe, fittings, or other valves in such a manner that damage could result.
- C. Slings, hooks, or tongs used for lifting shall be padded in such a manner as to prevent damage to exterior surface or interior linings and valve components. If any part of the coating, lining, or components is damaged, the repairs or replacement shall be made by the Contractor at his expense and in a manner satisfactory to the Engineer before attempting to install such valves.

- D. Only new valves will be allowed for installation and shall be stored in a manner to prevent damage and be kept free of dirt, mud, or other debris.

1.09 QUALIFICATIONS

- A. All of the valves shall be products of well-established firms that are fully experienced, reputable, have been selling this product for a minimum of 10 years, and are qualified in the manufacture of the particular product furnished. The valves shall be designed, constructed, and installed in accordance with the requirements and procedures of applicable AWWA standards and shall comply with these Specifications as applicable.

1.10 TESTING REQUIREMENTS (NOT USED)

1.11 MAINTENANCE (NOT USED)

1.12 OPERATIONS AND MAINTENANCE (O&M) MANUALS (NOT USED)

1.13 VALVE TYPE CLASSIFICATIONS

- A. Gate Valves (Type 600 series):

1. Type 637: Ductile-Iron Resilient Wedge Tapping Gate Valves, 4 Inches through 16 Inches (AWWA C515).
2. Type 685: Ductile-Iron Resilient Wedge Gate Valves for Exposed and Buried Service (AWWA C515).

- B. Insertion-Type Valves:

1. Insert Valve.
2. EZ Valve.

PART 2 PRODUCTS

2.01 GENERAL

- A. Valves are identified in the Drawings by size and type.
- B. All valves shall be complete with all necessary geared actuators, chainwheels and chains, handwheels, levers, valve bonnets, valve boxes, extension stems, operating nuts, and T-handle wrenches, which are required for proper valve operating and completing of the work included under this Section. Renewable parts including discs, packing, and seats shall be of types specified in this Section and acceptable by valve manufacturer for the intended service. All units shall

have the name of the manufacturer and the size of the valve cast on the body or bonnet or shown on a permanently attached stainless-steel plate in raised embossed letters. All isolation valves shall be suitable for the intended service with bubble-tight shutoff to flow in either direction.

- C. Bronze or brass components in contact with water shall comply with the definition of lead-free and meet the following requirements:

Constituent	Content
Zinc	7% maximum
Aluminum	2% maximum
Lead	0.25% maximum
Copper + Nickel + Silicon	83% minimum

- D. Valves and valve operators shall be factory prepared and primed and field finish coated in accordance with Section 09900, Painting and Coating.

2.02 VALVE ACTUATORS

- A. The valve actuator shall be an integral part of a valve. The valve actuator shall be provided, installed, and adjusted by the valve manufacturer. Actuator mounting arrangements shall facilitate operation and maintenance and shall be determined by the valve manufacturer unless indicated otherwise on the Drawings or directed by the Engineer.
- B. All valves shall open counter clockwise as viewed from the top. Unless otherwise required by the Owner, the direction of rotation of the wheel or wrench nut to open each valve shall be to the left (counterclockwise). Each valve body or actuator shall have the word "Open" cast on it and an arrow indicating the direction to open.
- C. Actuators shall clearly indicate valve position and an adjustable stop shall be provided to set closing torque. All exposed nuts, bolts, and washers shall be AISI Type 316 stainless-steel. Unless noted otherwise, valves shall be equipped with the following manual actuators:
1. Buried or Submerged Valves 6 Inches and Smaller: 2-inch-square operating nuts (with valve bonnets, valve boxes, and extension stems as required) and T-handle wrench.
 2. Buried or Submerged Valves 8 Inches and Larger: Geared actuators with 2-inch-square operating nuts (with valve bonnets, valve boxes, and extension stems as required) and wrench.

- D. For buried or submerged service, provide watertight shaft seals and watertight valve and actuator cover gaskets. Provide totally enclosed actuators designed for buried or submerged service.
- E. All buried valves shall have non-rising stems. All buried valves 3 feet below grade or deeper as measured at the valve centerline shall be furnished with an operator stem extension to extend the operating nut within 6 inches from the top of the valve box cover.

2.03 VALVE END CONNECTIONS

- A. Provide valve end connections conforming to connected piping and as shown in the Drawings. Generally, all buried valves shall be mechanical joint type end connectors. Exposed valves shall be screwed-end, socket-weld end, or flanged to conform to adjacent exposed connected piping system.
- B. Comply with the following standards:
 - 1. Threaded: ANSI B1.20.1.
 - 2. Flanged: ANSI B16.1 Class 125 unless other noted or AWWA C207.
 - 3. Mechanical (gland) Type: AWWA C111.
 - 4. Soldered: ANSI B16.18.
- C. Nuts, Bolts, and Washers: Wetted or internal to be bronze or stainless-steel. Exposed to be zinc or cadmium-plated.
- D. Epoxy Interior Coating: Provide epoxy coating for all interiors of ferrous valve body surfaces in accordance with AWWA C550. Coatings shall be NSF-approved for valves in all potable water piping services. Coatings shall not be required for stainless-steel valve interiors.

2.04 VALVE BOXES

- A. All buried valves 2-inch size and larger shall be equipped with a standard cast-iron roadway valve box. Valve boxes shall be of the slip or sliding type with a round lid marked "Water" for potable water valves. The box shall be designed to prevent transfer of the surface loads directly to the valve or piping. Valve boxes must have a minimum adjustable range of 12 inches and a minimum inner diameter of 6 inches. All valve boxes and lids shall be produced from grey cast-iron conforming to the latest revision of specification for grey iron castings, ASTM designation A48, Class 20A-25A. All castings shall be true and free of holes and shall be cleaned according to good foundry practice, chipped and ground as needed to remove fins and rough places on castings. Valve boxes have to be rated to sustain FDOT H-20 loadings and have a minimum depth of

8 inches. The valve box lid shall fit flush in the top of the box without forcing and shall not rock, tip, or rattle.

- B. Provide debris cap as required in the Drawings.
- C. Coat buried cast-iron pieces as specified in Section 09900, Painting and Coating, System No. 21 or with fusion-bonded epoxy.
- D. Valve boxes shall be as manufactured by Tyler Pipe, Geneco, Star Pipe Products, or equal.

2.05 EXTENSION STEMS

- A. Where the depth of the valve is such that its centerline is more than 4 feet below grade, provide operating extension stems to bring the operating nut to a point 6 inches below the surface of the ground and/or box cover. Where the valve is submerged, provide operating extension stems to bring the operating nut to 6 inches above the water surface. Extension stems shall be Type 316 stainless-steel, solid core, and shall be complete with 2-inch-square operating nut. The connections of the extension stems to the operating nuts and to the valves shall withstand without damage a pull of 300 foot-pounds.
- B. Extension stem diameters shall be as tabulated below:

Valve Size (inches)	Minimum Extension Stem Diameter (inches)
2	3/4
3, 4	7/8
6	1
8	1-1/8

2.06 FLOOR STANDS (NOT USED)

2.07 BOLTS, NUTS, AND GASKETS FOR FLANGED VALVES

- A. Bolts, nuts, and gaskets for flanged valves shall be as described in Section 15055, Piping Systems—General.

2.08 PAINTING AND COATING

- A. Coat metal valves located aboveground or in vaults and structures the same as the adjacent piping. If the adjacent piping is not coated, coat valves as specified in Section 09900, Painting and Coating, System No. 7. Apply the specified prime

and finish coat at the place of manufacture. The finish coat shall match the color of the adjacent piping. Coat handwheels the same as the valves.

- B. Coat buried metal valves at the place of manufacture as specified in Section 09900, Painting and Coating, System No. 21.
- C. Line the interior metal parts of metal valves 4 inches and larger, excluding seating areas and bronze and stainless steel pieces. Apply lining at the place of manufacture in accordance with the requirements of this Section.
- D. Test the valve interior linings and exterior coatings at the factory with a low-voltage (22.5 to 80 volts, with approximately 80,000-ohm resistance) holiday detector, using a sponge saturated with a 0.5% sodium chloride solution. The lining shall be holiday free.

2.09 GATE VALVES (TYPE 600 SERIES)

- A. Type 637—Ductile-Iron Resilient Wedge Tapping Gate Valves, 4 Inches through 16 Inches (AWWA C515):
 - 1. Valves shall comply with AWWA C515 and the following. Valves shall be of the bolted bonnet type with nonrising stems. Valve stems shall be Type 304 or 316 stainless-steel or cast, forged, or rolled bronze. Stem nuts shall be made of solid bronze. Bronze for internal working parts, including stems, shall not contain more than 2% aluminum nor more than 7% zinc. Bronze shall conform to ASTM B62 or ASTM B584 (Alloy C83600), except that the stem bronze shall have a minimum tensile strength of 60,000 psi, a minimum yield strength of 30,000 psi, and a minimum of 10% elongation in 2 inches (ASTM B584 or B763, Alloy C87600 or C99500). Body bolts shall be Type 316 stainless-steel. Ends shall be flanged, Class 125, ANSI B16.1. One end shall have slotted bolt holes in accordance with AWWA C515, Paragraph 4.4.1.3.4 to fit tapping machines.
 - 2. Provide reduction-thrust bearings above the stem collar. Stuffing boxes shall be O-ring seal type with two rings located in the stem above the thrust collar. Each valve shall have a smooth unobstructed waterway free from any sediment pockets.
 - 3. Valves shall be lined and coated at the place of manufacture with either fusion-bonded epoxy or heat-cured liquid epoxy. Minimum epoxy thickness shall be 8 mils.
 - 4. Manufacturers: Clow, AVK, American Flow Control, Mueller, Waterous, Kennedy, or equal.

- B. Type 685—Ductile-Iron Resilient Wedge Gate Valves for Exposed and Buried Service (AWWA C515):
1. Valves shall be cast-iron or ductile-iron body valves and comply with AWWA C515 and the following. Valves shall be of the bolted-bonnet type with nonrising stems. The valve gate shall be of ductile-iron with a resilient wedge. Valve stems shall be Type 304 or 316 stainless-steel or cast, forged, or rolled bronze. Stem nuts shall be made of solid bronze. Bronze shall conform to ASTM B62 or ASTM B584. Body bolts shall be Type 316 stainless-steel. End connections for exposed valves shall be flanged. End connections for buried valves shall be mechanical joint type. Provide reduction-thrust bearings above the stem collar. Stuffing boxes shall be O-ring seal type with two rings located in the stem above the thrust collar. Each valve shall have a smooth unobstructed waterway free from any sediment pockets. Valves shall be lined and coated at the place of manufacture with either fusion-bonded epoxy or heat-cured liquid epoxy. Minimum epoxy thickness shall be 8 mils.
 2. Manufacturers: Clow, AVK, American Flow Control, Kennedy, or approved equal.

2.10 INSERTION-TYPE VALVES

- A. Insertion-Type Valves shall be capable of being installed in an existing, pressurized pipeline while maintaining constant pressure and service.
- B. The maximum working pressure shall be 250 psi.
- C. The valve shall have a two-piece ductile iron or Type 304 stainless-steel body and resilient wedge. Ductile iron valves shall have a fusion-bonded epoxy coating meeting the requirements of AWWA C550 and ANSI/NSF 61 on the interior and exterior.
- D. The valve shall have a non-rising stem with a 2-inch square operating nut.
- E. The valve shall be InsertValve as manufactured by Team Industrial Services or EZ Valve by Advanced Valve Technologies.
- F. The valve shall be installed only by companies trained and certified by the valve manufacturer.
- G. Valves are intended for permanent installation and shall have restrained mechanical joints and meet the requirements of AWWA C509 or C515.

PART 3 EXECUTION

3.01 JOINTS

- A. Bolt holes of flanged valves shall straddle the horizontal and vertical centerlines of the pipe run to which the valves are attached. Clean flanges by wire brushing before installing flanged valves. Clean flange bolts and nuts by wire brushing, lubricate threads with oil and graphite, and tighten nuts uniformly and progressively. If flanges leak under pressure testing, loosen or remove the nuts and bolts, reseal or replace the gasket, reinstall or retighten the bolts and nuts, and retest the joints. Joints shall be watertight.
- B. Clean threaded joints by wire brushing or swabbing. Apply Teflon joint compound or Teflon tape to pipe threads before installing threaded valves. Joints shall be watertight.
- C. Install lug-type valves with separate hex head machine bolts at each bolt hole and each flange (two bolts per valve bolt hole).

3.02 INSTALLING BURIED VALVES

- A. Connect the valve, apply tape wrapping or polyethylene encasement as required on the Drawings, and place and compact the backfill to the height of the valve stem.
- B. Place block pads under the extension pipe to maintain the valve box vertical during backfilling and repaving and to prevent the extension pipe from contacting the valve bonnet.
- C. Mount the upper slip pipe of the extension in midposition and secure with backfill around the extension pipe. Pour the concrete ring allowing a depression so the valve box cap will be flush with the pavement surface.

3.03 FIELD COATING BURIED VALVES

- A. Coat flanges of buried valves and the flanges of the adjacent piping and the bolts and nuts of flanges and mechanical joints, as specified in Section 09900, Painting and Coating, System No. 24.
- B. Wrap buried metal valves 6 inches and larger with polyethylene sheet as specified in Section 15155, Ductile Iron Fittings.

3.04 VALVE LEAKAGE AND FIELD TESTING

- A. Test valves for leakage at the same time that the connecting pipelines are tested. See Section 15144, Pressure Testing of Piping, for pressure testing requirements. Protect or isolate any parts of valves, actuators, or control and instrumentation systems whose pressure rating is less than the pressure test. Valves shall show zero leakage. Repair or replace any leaking valves and retest.
- B. Operate manual valves through three full cycles of opening and closing. Valves shall operate from full open to full close without sticking or binding. Do not backfill buried valves until after verifying that valves operate from full open to full closed. If valves stick or bind or do not operate from full open to full closed, repair or replace the valve and repeat the tests.
- C. Test gear actuators through three full cycles from full-open to full-close without binding or sticking. The pull required to operate handwheel- or chainwheel-operated valves shall not exceed 80 pounds. The torque required to operate valves having 2-inch AWWA nuts shall not exceed 150 foot-pounds. If actuators stick or bind or if pulling forces and torques exceed the values stated previously, repair or replace the actuators and repeat the tests. Operators shall be lubricated in accordance with the manufacturer's recommendations before operating.
- D. Field testing must be witnessed by the Owner's representative.

END OF SECTION

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SECTION 15125
PIPING APPURTENANCES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment, and incidentals required and install complete and ready for operation all piping appurtenances as shown on the Drawings and as specified in this Section.
- B. All piping appurtenances shall be of the size shown on the Drawings. All equipment of the same type shall be from one manufacturer, unless authorized in writing by the Engineer.
- C. All piping appurtenances shall have the name of the manufacturer and the working pressure for which they are designed cast in raised letters upon the body.
- D. The piping appurtenances shall include, but not be limited to, the following:
 - 1. Tapping Saddles.
 - 2. Tapping Sleeves and Valves.
 - 3. Fire Hydrant.
 - 4. Water Meter.
 - 5. Corporation Stop.
 - 6. Curb Stop.

1.02 RELATED WORK

- A. Section 01330, Submittals and Acceptance.
- B. Section 09900, Painting and Coating.
- C. Section 15055, Piping Systems—General.

1.03 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance:

- A. Product technical submittal data shall contain the following information and data:
 - 1. Acknowledgment that products submitted meet requirements of standards referenced.

2. Manufacturer's installation instructions.
3. Expansion joints, flexible joints, couplings, adaptors, tapping sleeves, and other appurtenances:
 - a. Pressure and temperature rating.
 - b. Materials of construction.
 - c. Linings.
 - d. Dimensions and weight.
 - e. Accessories.
 - f. Manufacturer's product brochures, cut-sheets, and parts diagrams.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

A. American Iron and Steel Institute (AISI)

1. AISI Type 304L—Stainless Steel.
2. AISI Type 316—Stainless Steel.

B. American Society for Testing and Materials (ASTM)

1. ASTM A536—Standard Specification for Ductile Iron Castings.
2. ASTM C285—Standard Test Methods for Sieve Analysis of Wet-Milled and Dry-Milled Porcelain Enamel.

C. American Water Works Association (AWWA)

1. AWWA/ANSI C105/A21.5— Polyethylene Encasement for Ductile-Iron Pipe Systems.
2. AWWA/ANSI C153/A21.53—Standard for Ductile-Iron Compact Fittings for Water Service.
3. AWWA C207—Standard for Steel Pipe Flanges for Waterworks Service.
4. AWWA C210—Standard for Liquid-Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines.
5. AWWA/ANSI C213—Fusion-Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines.

6. AWWA C500—Standard for Metal-Seated Gate Valves for Water Supply Service.
7. AWWA C502—Standard for Dry-Barrel Fire Hydrants.
8. AWWA C700—Standard for Cold-Water Meters—Displacement Type, Bronze Main Case.
9. AWWA C800—Transit-Time Flowmeters in Full Closed Conduits.

D. American National Standards Institute (ANSI)

1. ANSI B16.5—Pipe Flanges and Flanged Fittings.

E. National Sanitation Foundation (NSF)

1. NSF 61—Drinking Water System Components - Health Effects.

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, HANDLING, AND STORAGE

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.
- B. All piping appurtenances, unless otherwise directed, shall be loaded and unloaded by lifting, and under no circumstances shall any piping appurtenances be dropped, skidded, or rolled.
- C. Slings, hooks, or tongs used for lifting shall be padded to prevent damage to exterior surface or interior linings of piping appurtenances. If any part of the coating, lining, or components is damaged, the Contractor shall make repairs or replacement at his expense and in a manner satisfactory to the Engineer before attempting to install such piping appurtenances.
- D. Only new piping appurtenances will be allowed for installation and shall be stored to prevent damage and be kept free of dirt, mud, or other debris.

1.09 QUALIFICATIONS

- A. All of the piping appurtenances shall be products of well-established firms that are fully experienced, reputable, have been selling this product for a minimum of 10 years, and qualified in the manufacture of the particular product furnished. The piping appurtenances shall be designed, constructed, and installed in accordance with the requirements and procedures of applicable AWWA standards and shall comply with these Specifications as applicable.

1.10 TESTING REQUIREMENTS (NOT USED)

1.11 MAINTENANCE (NOT USED)

1.12 OPERATIONS AND MAINTENANCE (O&M) MANUALS (NOT USED)

PART 2 PRODUCTS

2.01 TAPPING SADDLE

- A. Saddle body shall be made of ductile iron. Ductile iron shall be epoxy coated. Saddles shall be of the single- or multiple-strap design (multiple straps are required for sizes 10 inches and above). The straps shall be made from Type 304 stainless steel. The straps shall have a nominal width of 2 inches. Strap studs shall be made from AISI Type 304L stainless steel.
- B. Nuts and washers shall be made from Type 304 stainless steel and shall be treated to prevent galling. The straps shall have a curvature accurately formed to meet the diameter of the pipe on which the service saddle is to be installed. A Neoprene gasket shall be securely glued to or imbedded in the body of the clamp to ensure positive sealing against the pipe. Outlet sizes of ¾ inch and 1 inch shall have female C.C. thread while the outlet for 1-1/2 inches and 2 inches shall be female I.P. thread.

2.02 TAPPING SLEEVES AND VALVES

- A. Tapping sleeves and valves shall be designed for a minimum water working pressure of 150 psi and shall be tested at 300 psi. The design shall allow for the insertion of bolts from either side and the internal seal is to be the "O-ring" type. The tapping sleeve shall be furnished complete with bolts, nuts, and gaskets.
- B. Tapping valves shall be as specified in Section 15110, Manual, Check, and Process Valves, Type 637.

- C. Tapping sleeves for 4-inch- through 24-inch-diameter pipe shall be epoxy-coated fabricated-steel construction and manufactured to meet material specification ASTM C285 Grade C for the body. The flange shall conform to AWWA C207 Class D and have an ANSI 150-lb drilling and recessed for tapping valve.
- D. Tapping sleeves shall be of the flanged outlet type designed for attachment to the flanged inlet end of the tapping valve and shall be provided with mechanical joint ends at each end of the run. Tapping sleeves shall be Mueller “No. H-615” or approved equal.

2.03 FIRE HYDRANT

- A. Fire hydrants shall be in accordance with AWWA C502, for dry barrel-type fire hydrants. Fire hydrants shall meet the following requirements:

Catalogue and maintenance data	Required.
Type of shutoff	Compression or gate.
Size of hydrant (valve opening)	4.5-inch.
Inlet connection	6-inch, verify with drawings.
Outlet nozzles	Two 2.5-inch hose and one 4.5-inch pumper.
Outlet nozzle threads	See Note 1.
Direction to open	Counterclockwise.
Stem seals	O-ring.
Outlet nozzle cap chains	Required.
Drain outlet, non-corrodible	Required.
Traffic breakaway body and valve rod	Required.
Working pressure rating	200 psi (minimum).
Fire hydrant wrenches	Provide one wrench as spare part.
Nozzle wrenches	Provide one wrench as spare part for each size nozzle provided.
Breakaway repair kit	Provide one kit as spare part.

Note:

1. Outlet nozzle threads shall be the Owner's standard fire hydrant thread. The Contractor shall verify thread type before submittal.

- B. Hydrants shall have Underwriter's Laboratory (UL) and Factory Mutual (FM) approvals. Hydrant exteriors shall be painted with one coat of zinc-chromate alkyd primer and two finish coats of approved paint of the color required by the Owner. Hydrant interiors shall be painted with a paint system approved by NSF for use in potable water. Working parts shall be bronze. All internal parts shall be removable through the top of the hydrant. Hydrants shall conform to NFPA 24.

- C. Fire hydrant extensions shall be provided at no additional cost to the Owner to meet final grade requirements. All hydrants shall stand plumb. No portion of the fire hydrant shall be within 6 inches of a sidewalk. After installation, all hydrants shall be inspected, cleaned, and opened and closed as many times as required to verify that all aspects of the hydrant work properly.
- D. Fire hydrants shall be Mueller Super Centurion Model A423 or American B84BV.

2.04 CORPORATION STOPS

- A. Corporation stops (through 2 inches in diameter) shall be manufactured from cast bronze with machined fitting surfaces and in accordance with AWWA C800. Corporation stops shall withstand a minimum working pressure of 200 psi and be constructed for direct buried service. The inlet and outlet connections shall be coordinated to connect to the adjoining equipment, tubing, piping, couplings, unions, adapters, reducers, etc. by the Contractor. The inlet and outlet size shall be the same. The corporation stop outlet shall have the required all-bronze adapters, unions, reducers, bushings, or couplings to properly secure to the adjacent items and appurtenances. Corporation stops shall be Model F1100 series as manufactured by Ford Meter Box Company, Inc., or approved equal. Each corporation stop shall be furnished with a solid bronze square-head plug for plugging the corporation stop outlet.

2.05 CURB STOPS

- A. Curb stops shall be manufactured from cast bronze with machined fitting surfaces. Curb stops shall withstand a minimum working pressure of 150 psi. For curb stops (through 2 inches in diameter), the inlet and outlet connections shall be threaded or have 2-hole flanges to connect to the adjoining equipment, tubing, piping, couplings, unions, adapters, reducers, etc. as coordinated by the Contractor. The nuts and bolts for the flanges shall be cadmium-coated or zinc-plated. The inlet and outlet size shall be the same diameter, unless otherwise approved by the Engineer. The curb stop inlet and outlet shall have the required all-bronze adapters, unions, bushings, or couplings to properly secure it to the adjacent items and appurtenances. Curb stops shall have padlock wings and be lockable with standard size padlocks. Curb stops shall be as manufactured by Ford Meter Box Company, Inc., or approved equal. Each curb stop shall be furnished with a solid bronze square-head plug for plugging the curb stop outlet. Ford stainless steel, insert stiffeners shall be used as required for connection to tubing, PVC pipe, HDPE pipe, or as required.

PART 3 EXECUTION

3.01 INSTALLATION

- A. The Contractor shall install all piping appurtenances as shown on the Drawings.
- B. All piping appurtenances shall be installed in the location shown, unless approved otherwise, true to alignment and rigidly supported. Any damage to the above items shall be repaired to the satisfaction of the Owner and the Engineer.

3.02 SHOP PAINTING

- A. Exterior surfaces of ferrous valves and piping appurtenances shall be painted in accordance with Section 09900, Painting and Coating, unless noted or specified otherwise.

3.03 INSPECTION AND TESTING

- A. Completed valves and piping appurtenances shall be subjected to hydrostatic pressure test as described in Section 15055, Piping Systems—General, and the detail pipe sections of these Specifications. All leaks in valves and piping appurtenances shall be repaired and lines retested as approved by the Engineer. Before testing, the valves and pipelines shall be supported and thrust restrained for forces in excess of the test pressure to prevent movement during tests.

END OF SECTION

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SECTION 15141
DISINFECTION OF PIPING AND WATER STORAGE FACILITIES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section describes requirements for materials and procedures for disinfecting water mains by the continuous feed method and the slug method as well as for disinfecting water storage facilities. The Contractor shall disinfect piping in accordance with Rule 62-555.340, FAC, and AWWA C651 and disinfect water storage facilities in accordance with Rule 62-555.340, FAC, and AWWA C652, except as modified below.
- B. Use potable water for chlorination.
- C. Submit request for use of water from waterlines of the Owner at least 48 hours in advance.
- D. If water for disinfection and/or flushing is supplied from a temporary connection to the existing distribution system, appropriate backflow prevention methods shall be used.
- E. Proper disposal of the chlorinated disinfection water and the flushing water is the Contractor's responsibility. Disinfected water shall be neutralized in accordance with AWWA C651 and AWWA C652 before discharge.
- F. Before permit review and coordination with the Owner and appropriate regulatory authorities (i.e., FDEP and Sarasota County Department of Health), the Contractor shall provide a schedule for the rate of flow and locations of discharges for the disinfection of piping and water storage facilities. The neutralized discharge water shall be disposed of by discharging to the nearest sanitary sewer, to the local stormwater system through onsite swales, or by other approved means. Discharge to the local stormwater system shall be routed to avoid swale overflow and/or erosion. The Contractor shall be responsible for any damage that occurs related to the discharging process. The Contractor shall repair or replace any damage caused by discharging to the Owner's satisfaction at no additional expense to the Owner.
- G. It is the responsibility of the Contractor to implement and enforce strict adherence to safety guidelines, which are addressed in AWWA C651 and AWWA C652 as well as safety and handling instructions from the manufacturer. The Contractor

shall comply with all applicable national, state, and local safety regulations and requirements, including OSHA.

1.02 RELATED WORK (NOT USED)

1.03 SUBMITTALS (NOT USED)

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

A. American Water Works Association (AWWA)

1. ANSI/AWWA B300—Hypochlorites.
2. ANSI/AWWA B301—Liquid Chlorine.
3. AWWA C651—Disinfecting Water Mains.
4. AWWA C652—Disinfection of Water-Storage Facilities.

B. Florida Administrative Code (FAC)

1. FAC 62-555.340—Disinfection and Bacteriological Evaluation of Public Water System Components.

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 TESTING REQUIREMENTS (NOT USED)

1.11 MAINTENANCE (NOT USED)

1.12 OPERATIONS AND MAINTENANCE (O&M) MANUALS (NOT USED)

PART 2 PRODUCTS

2.01 LIQUID CHLORINE

- A. Liquid chlorine shall conform to ANSI/AWWA B301 and shall be applied in strict accordance with AWWA C651 and AWWA C652.

2.02 CALCIUM HYPOCHLORITE (DRY)

- A. Calcium hypochlorite shall conform to ANSI/AWWA B300 and shall be applied in strict accordance with AWWA C651 and AWWA C652. Calcium hypochlorite intended for swimming pool chlorination shall not be used under any circumstances.

2.03 SODIUM HYPOCHLORITE (SOLUTION)

- A. Sodium hypochlorite shall conform to ANSI/AWWA B300 and shall be applied in strict accordance with AWWA C651 and AWWA C652.

2.04 CHLORINE RESIDUAL TEST KIT

- A. For measuring chlorine concentration, the Contractor shall supply and use a medium-range, drop count, DPD drop dilution method kit in accordance with AWWA C651 and AWWA C652. Maintain kits in good working order available for immediate test of residuals at point of sampling.

PART 3 EXECUTION

3.01 GENERAL DISINFECTION PROCEDURE

- A. Before disinfection, the Contractor shall inspect materials for quality. The Contractor shall use materials and equipment that are appropriate for the disinfection methods selected. The Contractor shall observe the precautionary guidelines given in AWWA C651 and AWWA C652.
- B. During construction, the Contractor shall take preventative measures in accordance with AWWA C651 to protect materials from contamination.

- C. Hydrostatic testing shall be successfully performed before disinfection.
- D. Before disinfection, the Contractor shall clear water mains and water storage facilities of foreign debris.
- E. In accordance with AWWA C651 and AWWA C652 procedures, the Contractor shall disinfect all newly constructed materials and existing materials which may have been contaminated during construction. The Contractor shall provide adequate documentation that the required disinfection level (i.e., required chlorine residual and contact time) was successfully achieved.
- F. In accordance with Rule 62-555.340, FAC, following disinfection the total chlorine residual in the water mains and water storage facilities shall be reduced to 4 milligrams per liter (mg/L). The chlorine residual may be reduced via flushing with potable water or by a neutralizing agent that conforms to AWWA C651 and AWWA C652.
- G. After the total chlorine residual has been reduced to 4 mg/L, the Contractor shall conduct bacteriological testing for water mains and water storage facilities. Bacteriological sampling and testing shall be performed in accordance with Rule 62-555.340, FAC.
- H. The Contractor shall dispose of residue from cleaning and other construction operations as well as water from dewatering operations in a manner satisfactory to FDEP and the Sarasota County Department of Health.

3.02 CONTINUOUS-FEED METHOD FOR PIPELINES

- A. Continuous-feed disinfection shall be performed in accordance with AWWA C651. The Contractor shall introduce potable water into the pipeline at a constant measured rate. Feed the chlorine solution into the same water at a measured rate. Proportion the two rates so that the free chlorine concentration in the pipeline is maintained at a minimum concentration of 25 mg/L. Inject chlorine into the main at a point no greater than 3 feet downstream of the start of the new water main. Using the appropriate test kits specified by AWWA C651, the Contractor shall check the concentration at points downstream during the filling to ascertain that sufficient chlorine is being added. The water main shall be completely filled with chlorinated water. The chlorine contact time shall be at least 24 hours. The water shall be chlorinated so that after 24 hours the concentration of free chlorine residual in the water main shall be not less than 10 mg/L.

3.03 SLUG METHOD FOR PIPELINES

- A. The Contractor shall perform slug method disinfection in accordance with AWWA C651. Introduce the water in the pipeline at a constant measured rate. At a point no greater than 3 feet downstream of the start of the new water main, feed the chlorine solution into the pipeline at a measured rate so that the free chlorine concentration created in the pipeline is 100 mg/L. Using the appropriate test kits specified by AWWA C651, the Contractor shall check the concentration at points downstream during the filling to ascertain that sufficient chlorine is being added. Feed the chlorine for a sufficient period to develop a solid column or "slug" of chlorinated water that will, as it passes through the line, expose all interior surfaces to a concentration of at least 100 mg/L for at least 3 hours.

3.04 DISINFECTION OF VALVES, BLIND FLANGES, AND APPURTENANCES

- A. During the period that the chlorine solution is in the pipeline or as the slug comes into contact with hydrants and valves, open and close valves at least three times to obtain a chlorine residual at hydrants and other pipeline appurtenances. Swab exposed faces of valves and blind flanges before bolting flanges in place with a 1% sodium hypochlorite solution.

3.05 DISINFECTION OF CONNECTIONS TO EXISTING PIPELINES

- A. The Contractor shall disinfect isolation valves, pipe, and appurtenances in accordance with AWWA C651, Section 4.7. Flush with potable water until discolored water, mud, and debris are eliminated. Swab interior of pipe and fittings with a 1% sodium hypochlorite solution. After disinfection, flush with potable water again until water is free of chlorine odor.

3.06 CONFIRMATION OF RESIDUAL

- A. After the chlorine solution applied by the continuous feed method has been retained in the pipeline for 24 hours, the Contractor shall confirm that a free chlorine residual of 10 mg/L minimum exists along the pipeline by sampling at air valves and other points of access, such as tapping valves.
- B. With the slug method, confirm by sampling as the slug passes each access point and as it leaves the pipeline that the free chlorine concentration in the slug is at least 50 mg/L. If the free chlorine residual is less than 50 mg/L, the flow shall be stopped and the slug residual concentration shall be increased to 100 mg/L before disinfection may resume.

3.07 PIPELINE FLUSHING

- A. After confirming the free chlorine residual and sufficient contact time, the Contractor shall flush the excess chlorine solution from the pipeline until the free chlorine concentration in the water leaving the pipe is no higher than 4 mg/L.

3.08 BACTERIOLOGICAL SAMPLING AND TESTING

- A. In accordance with Rule 62-555.340, FAC, an employee of a certified laboratory shall collect and deliver required samples to the certified laboratory and obtain a bacteriologic quality test to demonstrate the absence of coliform organisms in each separate section of the pipeline and in each structure after chlorination and refilling. Samples shall be delivered to a certified laboratory within 6 hours of sampling:
 - 1. For water mains, collect at least one set of samples from every 1,200 feet of the new water main, plus one set from the end of the line and at least one set from each branch. At each connection to an existing pipeline, take two additional samples.
- B. The Contractor shall take chlorine residual samples at the time bacteriological samples are taken. If the chlorine residual is greater than 4 mg/L, the bacteriological test shall be considered invalid and the residual shall be reduced to 4 mg/L and the bacteriological testing shall be performed until the required criteria are satisfied.
- C. In accordance with AWWA C652, the Contractor shall test the water in the storage facility to ensure that no offensive odor has been imparted from the disinfection process.

3.09 REPETITION OF PROCEDURE

- A. If the initial chlorination fails to produce required residuals and bacteriologic tests, the Contractor shall repeat the chlorination and testing until satisfactory results are obtained.
- B. If the water main is installed before satisfactory bacteriological results are achieved, a precautionary boil water notice must be issued if recommended by the water supplier or if recommended by the Department of Health's "Guidelines for the Issuance of Precautionary Boil Water Notices" in accordance with Rule 62-555.340, FAC.

3.10 TEST FACILITY REMOVAL

- A. After satisfactory disinfection, the Contractor shall disinfect and replace air valves, restore the pipe coating, and complete the pipeline where temporary disinfection or test facilities were installed.

END OF SECTION

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SECTION 15144
PRESSURE TESTING OF PIPING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies the hydrostatic and leakage testing of pressure piping for water distribution and transmission mains.

1.02 RELATED WORK

- A. Section 01500, Temporary Facilities and Controls.

1.03 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance:

- A. Test bulkhead locations and design calculations, pipe attachment details, and methods to prevent excessive pipe wall stresses.
- B. Three copies of the test records to the Engineer upon completion of the testing.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

- A. American Water Works Association (AWWA)
 - 1. AWWA C600—Standard for Installation of Ductile Iron Water Mains.
 - 2. AWWA C605—Standard for Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water.

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 TEST PRESSURES

- A. Test pressures for the various services and types of piping are shown in the Pipe Schedule in the Drawings.

1.11 TESTING RECORDS

- A. The Contractor shall provide records of each piping installation during the testing. These records shall include the following information:
 - 1. Date and times of test.
 - 2. Identification of process, pipeline, or pipeline section tested or retested.
 - 3. Identification of pipeline material.
 - 4. Identification of pipe specification.
 - 5. Test fluid.
 - 6. Test duration.
- B. Test pressure at low point in process, pipeline, or pipeline section.
- C. Remarks: Leaks identified (type and location), types of repairs, or corrections made.
- D. Certification by the Contractor that the leakage rate measured conformed to the Specifications.

1.12 MAINTENANCE (NOT USED)

1.13 OPERATIONS AND MAINTENANCE (O&M) MANUALS (NOT USED)

PART 2 PRODUCTS

2.01 MANUAL AIR-RELEASE VALVES FOR BURIED PIPING

- A. The Contractor shall provide temporary manual air-release valves at test bulkheads for pipeline test. Construct the pipe outlet in the same manner as for a permanent air valve and, after use, seal with a blind flange, pipe cap, or plug and coat the same as the adjacent pipe.

2.02 TEST BULKHEADS

- A. The Contractor shall design and fabricate test bulkheads in accordance with Section VIII of the ASME Boiler and Pressure Vessel Code. Materials shall comply with Part UCS of the code. Design pressure shall be at least 2.0 times the specified test pressure for the section of pipe containing the bulkhead. Limit stresses to 70% of yield strength of the bulkhead material at the bulkhead design pressure. Include air-release and water drainage connections.

2.03 TESTING FLUID

- A. The Owner will provide a source of supply from the existing treated water distribution system for the Contractor's use in filling the lines. An air break shall be maintained at all times between the Owner's distribution system and the Contractor's equipment to prevent cross-connection. The line shall be slowly filled with water and the specified test pressure shall be maintained in the pipe for the entire test period by means of a pump furnished by the Contractor. Provide accurate means for measuring the quantity of water required to maintain this pressure. The amount of water required is a measure of the leakage.
- B. Testing fluid shall be potable water unless a pneumatic test is indicated on the Piping Schedule.
- C. For potable water pipelines, obtain and use only potable water for hydrostatic testing.
- D. Submit request for use of water from waterlines of the Owner 48 hours in advance.
- E. The Contractor shall provide back flow prevention control for temporary connections to existing water mains.

2.04 TESTING EQUIPMENT

- A. The Contractor shall provide calibrated pressure gauges, pipes, bulkheads, pumps, compressors, chart recorder, and meters to perform the hydrostatic testing. The Contractor shall provide any necessary assistance required for testing.

PART 3 EXECUTION

3.01 TESTING PREPARATION

- A. Pipes shall be in place, backfilled, and anchored before beginning pressure testing.
- B. For buried piping, the pipe may be partially backfilled and the joints left exposed for inspection during an initial leakage test. However, perform the final pressure test after completely backfilling and compacting the trench.
- C. Provide any temporary piping needed to carry the test fluid to the piping that is to be tested. After the test has been completed and demonstrated to comply with the Specifications, disconnect and remove temporary piping. Do not remove exposed vent and drain valves at the high and low points in the tested piping; remove any temporary buried valves and cap the associated outlets. Plug taps or connections to the existing piping from which the test fluid was obtained.
- D. Provide temporary drain lines needed to carry testing fluid away from the pipe being tested. Remove such temporary drain lines after completing the pressure testing.
- E. Before starting the test, the Contractor shall notify the Engineer and the Owner's Representative in writing 48 hours prior. The Owner, Engineer, or a representative shall be present during the testing.

3.02 CLEANING

- A. Before conducting hydrostatic tests, the Contractor shall flush pipes with water to remove dirt and debris. For pneumatic tests, blow air through the pipes. Maintain a flushing velocity of at least 3 fps for water testing and at least 2,000 fpm for pneumatic testing. Flush pipes for the period given by the formula:

$$T = \frac{2L}{3}$$

in which:

T = flushing time (seconds).

L = pipe length (feet).

- B. Water, sediment, dirt, and foreign material accumulated during this cleaning operation shall be discharged, vacuumed, or otherwise removed from the pipe.

3.03 LENGTH OF TEST SECTION FOR BURIED PIPING

- A. The maximum length of test section for buried pipe of 12 inches or smaller in diameter is 3,500 feet. Provide intermediate test bulkheads where the pipeline length exceeds these limits.

3.04 INITIAL PIPELINE FILLING FOR HYDROSTATIC TESTING

- A. The maximum rate of filling shall not cause the water velocity in the pipeline to exceed 1 fps. Filling may be facilitated by removing automatic air valves and releasing air manually.

3.05 TESTING NEW PIPE WHICH CONNECTS TO EXISTING PIPE

- A. Before testing new pipelines that are to be connected to existing pipelines, the Contractor shall isolate the new line from the existing line by test bulkheads, spectacle flanges, or blind flanges. After the new line has been successfully tested, remove test bulkheads or flanges and connect to the existing piping. Regulatory clearance shall be obtained before connecting new potable pipe to existing pipe.

3.06 HYDROSTATIC TESTING OF BURIED PIPING

- A. Where any section of the piping contains concrete thrust blocks or encasement, the Contractor shall not make the pressure test until at least 10 days after the concrete has been placed.
- B. Apply and maintain the test pressure by a positive displacement hydraulic force pump.
- C. Maintain the test pressure for 2 hours by restoring the pressure whenever it falls 5 psi.
- D. After the test pressure is reached, use a meter to measure the additional water added to maintain the pressure. This amount of water is the loss due to leakage in the piping system. The allowable leakage volume is defined by the formulas:

PVC Pipe:

$$L = \frac{ND(P)^{1/2}}{C}$$

in which:

- L = allowable leakage (gallons).
- N = number of rubber-gasketed joints in the pipe tested.
- D = diameter of the pipe (inches).
- P = specified test pressure (psig).
- C = 7,400.

- E. The leakage test shall be a separate test following the pressure test and shall not be less than 2 hours long. All leaks evident at the surface shall be repaired and leakage eliminated regardless of the total leakage as shown by test. Lines that fail to meet tests shall be repaired and retested as necessary until test requirements are complied with. Defective materials, pipes, valves, and accessories shall be removed and replaced.
- F. The allowable leakage for buried piping having threaded, brazed, or welded (including solvent welded) joints shall be zero.
- G. Submit plan for testing to the Engineer for review at least 10 days before starting the test.
- H. Repair and retest any pipes showing leakage rates greater than that allowed in the criteria above.

3.07 REPETITION OF TEST

- A. If the actual leakage exceeds the allowable leakage, locate and correct the faulty work and repeat the test. Restore the work and all damage resulting from the leak and its repair. Eliminate visible leakage.

3.08 BULKHEAD AND TEST FACILITY REMOVAL

- A. After a satisfactory test, the Contractor shall remove the testing fluid, remove test bulkheads and other test facilities, and restore the pipe coatings/linings.

END OF SECTION

SECTION 15146
HIGH-DENSITY POLYETHYLENE (HDPE) PIPE

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Description: The Contractor shall provide all materials and incidentals, including piping, fittings, flanged adapters, flanged joints, hardware, and appurtenances for the HDPE piping systems shown on the Drawings.

1.02 RELATED WORK

- A. Section 01330, Submittals and Acceptance.
- B. Section 01650, Delivery, Storage, and Handling.
- C. Section 02305, Earthwork for Utilities.
- D. Section 15055, Piping Systems—General.
- E. Section 15144, Pressure Testing of Piping.

1.03 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance, and Section 15055, Piping Systems—General.

- A. In general, shop drawings and related manufacturer's product certification shall be made in accordance with the General and Special Conditions of the Contract for approval before the manufacturer constructs or fabricates the material. The following items, which require shop drawings, are brought to the Contractor's attention. The list may not include all items for which shop drawing submittals are required to meet the requirements of the project.
 - 1. Detail drawings of all classes of pipe, joints, and fittings.
 - 2. Detail Drawings of all joints, including manufacturer's certified factory and/or laboratory test reports to confirm thrust-restraint capacities and restraining mechanism application.
 - 3. Existing piping connection details.
 - 4. Adapters for connection to mechanical joint valves and ductile iron pipe fittings.
- B. Certification and test reports for the materials, manufacturing, and testing of the types of pipe supplied shall be furnished by the HDPE pipe manufacturer for the manufacturer's own products in accordance with the latest standards of the industry as described in this Section.

- C. Provide a statement in writing from the HDPE pipe manufacturer that the manufacturer is listed with the Plastic Pipe Institute as a qualified extruder for the polyethylene resin to be used in the manufacture of the pipe for this project.
- D. All persons making heat fusion joints shall receive training in the manufacturer's recommended procedures. The Contractor shall maintain records of trained personnel and certify that training was received not more than 12 months before construction began.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM A307—Standard Specification for Standard Steel Bolts and Studs, 60,000 psi Tensile Strength.
 - 2. ASTM D3261—Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
 - 3. ASTM D3350—Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
 - 4. ASTM D4976—Standard Specification for Polyethylene Plastics Molding and Extrusion Materials.
 - 5. ASTM F714—Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter.
- B. American Water Works Association (AWWA)
 - 1. AWWA C901—Polyethylene (PE) Pressure Pipe and Tubing, 1/2-inch (13 mm) through 3-Inch (76 mm), for Water Service.
- C. International Organization for Standardization (ISO)
 - 1. ISO 9001—Quality Management Systems – Requirements.

1.06 QUALITY ASSURANCE

- A. The pipe and fitting manufacturer(s) shall have an established quality-control program responsible for inspecting incoming and outgoing materials. Incoming polyethylene materials shall be inspected for density, melt flow rated, and contamination. The cell classification properties of the material shall be certified by the supplier and verified by the manufacturer's quality control.

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, and Section 15055, Piping Systems—General, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 TESTING REQUIREMENTS

- A. See Section 15144, Pressure Testing of Piping.

1.11 MAINTENANCE (NOT USED)

1.12 OPERATIONS AND MAINTENANCE (O&M) MANUALS (NOT USED)

PART 2 PRODUCTS

2.01 PIPE AND FITTINGS

- A. General
 - 1. All HDPE shall be DriscoPlex PE 4710 HDPE; or approved equal.
 - 2. HDPE pipe 3 inches in diameter and smaller shall be IPS unless otherwise specified or shown in the Drawings.
 - 3. All HDPE piping system components shall be the products of one manufacturer.
 - 4. Pipe and fittings shall be manufactured by an ISO 9001-certified manufacturer.

B. HDPE Pipe

1. Pipe sizes 3 inches and smaller in diameter shall meet the requirements of AWWA C901—Polyethylene (PE) Pressure Pipe and Tubing, 1/2-inch (13 mm) through 3-Inch (76 mm), for Water Service, rated as PE 4710. The minimum pressure rating shall be 200 psi SDR 11.
2. The polyethylene compound shall be suitably protected against degradation by ultraviolet light.
3. The maximum allowable hoop stress shall be 800 psi at 73.4° F.
4. The pipe manufacturer shall be listed with the Plastic Pipe Institute as meeting the requirements of the resin manufacturer to manufacture pipe from the resin used.

C. Fittings

1. The pipe manufacturer shall mold or fabricate the polyethylene fittings. Butt fusion outlets shall be made to the same outside diameter, wall thickness, and tolerances as the mating pipe. All fittings and custom fabrications shall be fully rated for the same internal pressure as the mating pipe.
 - a. Molded Fittings: Molded fittings shall be manufactured in accordance with ASTM D3261 and shall be so marked. Each production lot of molded fittings shall be subjected to the test required under ASTM D3261. The manufacturer shall submit samples from each molded fitting production lot to x-ray inspection for voids and shall certify that voids were not found.
 - (1) Polyethylene Flange Adapters: Flange adapter shall be made with sufficient throughbore length to be clamped in a butt fusion joining machine without the use of a subend holder. The sealing surface of the flange adapter shall be machined with a series of small v-shaped grooves to restrain the gasket against blow-out. Flange adapters shall be fitted with ductile-iron backup rings pressure rated equal to or greater than the mating pipe. The Contractor shall provide flat ring-type EPDM gaskets with gasket thickness and hardness as recommended by the pipe manufacturer for use with HDPE flanged joints. Provide carbon steel hardware (bolts, nuts, washers, etc.) conforming to ASTM A307, Grade B for use with the flange adapters assemblies in accordance with the pipe manufacturer's recommendations. Gaskets shall be made from material suitable for exposure to the liquid within the pipe.

- b. Fabricated Fittings: Fabricated fittings shall be made by heat fusion joining specially machined shapes cut from pipe, polyethylene sheet stock, or molded fittings. Fabricated fittings shall be rated for internal pressure service equivalent to the full-service pressure rating of the mating pipe. Pressure de-rated fittings are not acceptable. Directional fittings 16 inches IPS and larger, such as elbows, tees, crosses, etc., shall have a plain end inlet for butt fusion and flanged directional outlets.

D. HDPE Pipe Jointing Method

1. HDPE pipe shall be jointed by butt fusion in accordance with the pipe manufacturer's directions and only for pipe within one SDR ratio of each other.
2. For SDR ratios that are two or more apart (i.e., SDR 21 to an SDR 11), the joint shall be made using a restrained joint. Same-diameter pipe may be joined by using HDPE flange adapters and backup rings bolted to each other.
3. All HDPE pipe joined by butt fusion shall be made from the same class and type of raw material made by the same raw material supplier.
4. *Butt fusion* means the butt joining of the pipe by heat fusion aligned faces of the pipe ends (butts) in a suitable apparatus and joining under controlled pressure and alignment.
5. The external bead resulting from the butt-fusion process shall be visible and examined for complete butt-fusion 360° around the pipe exterior.
6. Short spools of pipe between valves and fittings shall be ductile iron pipe, with all joints restrained for sizes 4 inches and larger. For 2-inch, the spool shall be Schedule 40 Type 304 stainless steel piping or Schedule 80 PVC piping with IP threads stainless steel or PVC fittings and all joints restrained.

2.02 LOCATOR WIRE

- A. HDPE piping shall be installed with two insulated 12-gauge minimum AWG solid strand copper wires for location purposes as specified in Section 15055, Piping Systems—General.

PART 3 EXECUTION

3.01 GENERAL

- A. All polyethylene pipe shall be cut, fabricated, joined, and installed in strict conformance with the pipe manufacturer's recommendations. Joining, laying, and

pulling of polyethylene pipe shall be accomplished by personnel experienced in working with HDPE pipe.

3.02 LAYING PIPE

A. Joints

1. All HDPE to HDPE pipe joints shall be joined by heat fusion that produces homogeneous, sealed, leak-tight joints.

B. Butt Fusion Testing

1. The Contractor shall test the first fusion of each day.
2. In testing, the fusion shall be allowed to cool completely and then fusion test straps shall be cut out. The test shall be a minimum of 12 inches or 30 times the wall thickness in length with the fusion in the center and a minimum of 1 inch or 1.5 times the wall thickness in width. Bend the test strap until the ends of the strap touch. The Contractor shall not begin until a fusion test has passed the bent strap test.

C. Pipe Deflection

1. When it is necessary to deflect pipe from a straight line in either the vertical or horizontal plane or where long radius curves are permitted, the amount of deflection shall not exceed 75% of that recommended by the manufacturer.

D. Pipe Cutting

1. Cutting HDPE butt fusion connections to HDPE pipe, valves, fittings, or closure pieces shall be done in a neat, workmanlike manner without damaging the pipe. Ends shall be cut square and perpendicular to the pipe axis.

3.03 FLUSHING AND CLEANING

- A. Flushing and Cleaning shall be as specified in Section 15144, Pressure Testing of Piping.

3.04 TESTING AND LEAKAGE

A. Hydrostatic Tests—General

1. All testing shall comply with Section 15144, Pressure Testing of Piping, except as specified in this Section.
2. All field tests shall be made in the presence of the Owner or Engineer. Except as otherwise directed, all pipelines shall be tested. All piping to operate under liquid pressure shall be tested in sections of approved length, typically from valve to valve and in no case longer than 1,000 feet.
3. Hydrostatic testing shall consist of a combined pressure test and leakage test. The field test pressure shall be as indicated on the Pipe Schedule on the Drawings, measured at the lowest point of the section being tested. The pressure shall be applied by a pump connected to the pipe in a manner satisfactory to the Engineer. The pump, pipe connection, and all necessary apparatus shall be furnished by the Contractor and shall be subject to the satisfaction of the Engineer.
4. The maximum duration for any test, including initial pressurization, initial expansion, and time at test pressure, must not exceed 8 hours. If the test is not completed due to leakage, equipment failure, etc., depressurize the test section and allow it to “relax” for at least 8 hours before bringing the test section up to test pressure again.
5. Monitored Make-Up Water Test: The test procedure consists of initial expansion and test phases.
 - a. During the initial expansion phase, the test section is filled with water. Once the line is filled, make-up water is added at hourly intervals as required to maintain the test pressure for 3 hours.
 - b. At the end of the initial expansion period, the addition of make-up water will cease. During the test phase the pipe will not have any water added to it for the following 2 hours. The 2 hours will be the actual leakage test. At the end of the 2-hour period, measured make-up water will be added to the pipe to return it to the original test pressure.
 - c. If the amount of make-up water added is greater than calculated using the numbers listed below, the section being tested will be considered to have a leak. The leak shall be found and fixed at the Contractor’s expense and that section of the line retested before

continuing with subsequent leakage tests. Testing and repairs shall be repeated at the Contractor's expense until the amount of make-up water is less than the amount calculated using the numbers listed below.

ALLOWABLE FOR EXPANSION UNDER TEST PRESSURE*
POLYETHYLENE PIPE

Nominal Pipe Size (in.)	Allowances for Expansion (US Gal/100 Feet of Pipe)		
	1-Hour Test	2-Hour Test	3-Hour Test
2	0.08	0.12	0.15
3	0.10	0.15	0.25

*These allowances only apply to the test phase and not to the initial expansion phase.

END OF SECTION

SECTION 15148
FUSIBLE POLYVINYLCHLORIDE WATER MAINS
AND APPURTENANCES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Work included in this Section consists of furnishing all labor, equipment, tools, appliances, and materials and performing all operations necessary to construct and install water mains, including all piping, casing, and appurtenances, complete and ready for operation as indicated on the Drawings and described in this Section.
- B. The Work shall include but not be limited to fusible polyvinylchloride (FPVC), fittings, and butt-fusion techniques; testing of pipe and all other work necessary to complete the installation.
- C. The Contractor shall furnish to the Owner with a 2-year warranty on the design, materials, fabrication, and workmanship of all FPVC pipe and fittings furnished. The warranty period shall begin upon Substantial Completion of the Project.

1.02 RELATED WORK

- A. Section 01330, Submittals and Acceptance.
- B. Section 02305, Earthwork for Utilities.
- C. Section 15055, Piping Systems—General.

1.03 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance:

- A. In general, shop drawings and related manufacturer's product certification shall be made in accordance with the General and Supplementary Conditions of the Contract for approval before the manufacturer constructs or fabricates the material. The following items, which require shop drawings, are brought to the Contractor's attention. The list may not include all items for which shop drawings must be submitted to meet the requirements of the project.
 - 1. Catalog/manufacturer data sheets of all classes of pipe, joints, and fittings.
 - 2. Detail drawings of restrained and flexible joints, including test reports to confirm thrust restraint capacities and restraining mechanism application.

3. Pipeline laying schedule tabulated and referenced to construction line and grade controls shown on plans, with station, offset, and elevations. References shall be provided for pipe fittings, valves, service connections, and other important features of the pipeline.
 4. All appurtenant items.
- A. The pipe manufacturer shall perform and furnish certification and test reports for the materials, manufacturing, and testing of the types of pipe supplied.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

- A. American Society for Testing and Materials (ASTM)
1. ASTM D1784—Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated PVC (CPVC) Compounds.
 2. ASTM D1785—Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80 and 120.
 3. ASTM D2152—Standard Specification for Test Method for Degree of Fusion of Extruded PVC Pipe and Molded Fittings by Acetone Immersion.
 4. ASTM D2241—Standard Specification for PVC Plastic Pipe (SDR-PR).
 5. ASTM D2837—Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products.
 6. ASTM F477—Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
 7. ASTM F1057—Standard Specification for Standard Practice for Estimating the Quality of Extruded PVC Pipe by the Heat Reversion Technique.
- B. American Water Works Association (AWWA)
1. ANSI/AWWA C110/A21.10—Standard for American National Standard for Ductile-Iron and Gray-Iron Fittings, 3-inch through 48-inch, for Water and other Liquids.
 2. ANSI/AWWA C111/A21.11—Standard for American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

3. AWWA C605—Standard for Underground Installation of PVC Pressure Pipe and Fittings for Water.
4. AWWA C651—Standard for Disinfecting Water Mains.
5. AWWA C900—Standard for PVC Pressure Pipe and Fabricated Fittings, 4 in. through 12 in., for Water Distribution.
6. AWWA C905—Standard for PVC Pressure Pipe and Fabricated Fittings, 14 in. through 48 in., for Water Distribution and Transmission.
7. AWWA M23—AWWA Manual of Supply Practices PVC Pipe-Design and Installation Second Edition.

C. Other Standards

1. UNI-PUB-08—Tapping Guide for PVC Pressure Pipe.
2. NSF-14—Plastics Piping System Components and Related Materials.
3. NSF-61—Drinking Water System Components-Health Effects.
4. PPI TR-2—PVC Range Composition Listing of Qualified Ingredients.

1.06 QUALITY ASSURANCE

A. Technical Guidance

1. Plastic Pipe Institute (PPI) Manual TR-4: Recommended Hydrostatic Strengths and Design Stresses for Thermoplastic Pipe and Fittings Compounds.
2. Plastic Pipe Institute Manual TR-3: Policies and Procedures for Developing Recommended Hydrostatic Design Stresses for Thermoplastic Pipe Materials.
3. Plastic Pipe Institute Manual TR-3.

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

B. Inspection Upon Delivery

1. All pipe fittings and appurtenances shall be subject to visual inspection by a representative of the Owner at the point of delivery and again just before

being lowered into the trench. All materials found to be defective due to manufacture or damaged in transit shall be rejected and shall be immediately removed from the job site.

2. The Owner may perform or cause to be performed all tests as specified in the applicable standards to ensure conformance with the standard. If the pipe or appurtenances fail to comply with such standards, the responsibility for replacing the defective materials shall be that of the manufacturer or the Contractor.
3. The entire product of any manufacturer may be rejected when, in the opinion of the Owner, the methods of manufacture fail to secure uniform results or where the materials are such as to produce pipe and/or fittings of inferior quality.

1.09 QUALIFICATIONS

A. Manufacturer Requirements:

1. All piping shall be made from PVC compound conforming to cell classification 12454 per ASTM D1784. The material shall have a minimum hydrostatic design basis of 4,000 psi at 73°F in accordance with ASTM D2837.

B. Fusion Technician Requirements:

1. The Fusion Technician shall be fully qualified by the pipe supplier to install FPVC pipe of the type(s) and size(s) being used. Qualification shall be current as of the actual date of fusion performance on the project.

C. Specified Pipe Suppliers:

1. FPVC pipe shall be used as manufactured under the trade names Fusible C-900®, Fusible C-905®, and FPVC®, for Underground Solutions, Inc., Poway, CA, (858) 679-9551. Fusion process shall be as patented by Underground Solutions, Inc., Poway, CA, Patent No. 6,982,051.

1.10 TESTING REQUIREMENTS (NOT USED)

1.11 MAINTENANCE (NOT USED)

1.12 OPERATIONS AND MAINTENANCE (O&M) MANUALS (NOT USED)

1.13 RECORD DRAWINGS

- A. The Contractor shall provide Record Drawings redlines indicating exact locations of all pipe and fittings. The Contractor shall provide a minimum of two ties for each fitting, valve, or appurtenance and its elevation. The Contractor shall provide record information for all existing buried utilities encountered.

1.14 SEPARATION OF RECLAIMED WATER, POTABLE WATER, AND WASTEWATER LINES (NOT USED)

1.15 SYSTEM IDENTIFICATION

- A. All FPVC potable water mains shall be installed with a continuous, insulated 12-gauge copper wire installed directly on top of the pipe for location purposes.
- B. All FPVC potable water mains shall be a solid blue color. All lettering shall appear legibly on the pipe and shall run the entire length of the pipe. Lettering shall be appropriate for the intended use.

1.16 DEFINITIONS (NOT USED)

PART 2 PRODUCTS

2.01 GENERAL (NOT USED)

2.02 PIPE AND FITTINGS – FPVC

- A. FPVC Pressure Pipe for Water
 - 1. FPVC pipe shall conform to AWWA C900, AWWA C905, ASTM D1785, or ASTM D2241 for standard dimensionality, as applicable. Testing shall be in accordance with the referenced AWWA standards.
 - 2. FPVC pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer. No bell or gasket of any kind shall be incorporated into the pipe.
 - 3. FPVC pipe shall be manufactured in a standard 40-foot nominal length or custom lengths as specified.
 - 4. Dimension ratios for FPVC pipe shall be DR18.
 - 5. FPVC pipe shall be blue.

6. Pipe generally shall be marked to include as a minimum:
 - a. Nominal pipe size.
 - b. PVC.
 - c. Dimension Ratio, Standard Dimension Ratio, or Schedule.
 - d. Pressure class or standard pressure rating.
 - e. Standard designation number or pipe type.
 - f. Extrusion production-record code.
 - g. Trademark or trade name.
7. Cell Classification 12454 and/or PVC material code 1120 may also be included.
8. Pipe shall be homogeneous throughout and free of visible cracks, holes, foreign material, blisters, or other visible deleterious faults.

B. Fusion Joints

1. Unless otherwise specified, FPVC pipe lengths shall be assembled in the field with butt-fused joints. The Contractor shall follow the pipe supplier's written guidelines for this procedure. All fusion joints shall be completed as described in this specification.

C. Connections and Fittings for Pressure Applications

1. Connections shall be defined in conjunction with the coupling of project piping, as well as the tie-ins to other piping systems.

D. Ductile Iron Mechanical and Flanged Fittings

1. Acceptable fittings for use with FPVC pipe shall include standard ductile as specified in Section 15155, Ductile Iron Fittings.
 - a. Connections to FPVC pipe may be made using a restrained or non-restrained retainer gland product for PVC pipe, as well as for MJ or flanged fittings.
 - b. Connections to fittings and valves shall be restrained.
2. Ductile iron fittings and glands must be installed according to the manufacturer's guidelines.

E. Restrained Joints

1. The following pipe joints and fittings restraint methods can be used to prevent pipe joints and fittings from separating under pressure. No additional financial compensation will be provided to the Contractor for providing the following methods of restraint:
 - a. Mechanical joint fittings used with PVC/FPVC pipe (3-inch-through 36-inch-diameter DR 18 pipe) shall be restrained with the EBAA Iron MEGALUG® Series 2000 PV Restrainer or an equal approved by the Engineer. The Series 2000 PV restrainers shall provide a minimum of 165-psi restraint with a 2 to 1 safety factor. The restraining device and Tee head bolts shall be manufactured of high-strength ductile iron meeting ASTM A536, Grade 65-42-10. Clamping bolts and nuts shall be manufactured of corrosion-resistant, high-strength, low-alloy CORTEN steel meeting the requirements of ASTM A242.
 - b. All parts of the joint restraint systems shall be coated with coal tar epoxy as in Section 09900, Painting and Coating, Mega-Bond coating system by EBAA Iron, Inc. or Engineer-approved equal.

F. Sleeve-Type Couplings

1. Sleeve-type mechanical couplings shall be manufactured for use with PVC pressure pipe and may be restrained or unrestrained as indicated on the Drawings.
2. Sleeve-type couplings shall be rated at the same or greater pressure carrying capacity as the pipe itself.

G. Connection Hardware

1. Bolts and nuts for buried service shall be made of non-corrosive, high-strength, low-alloy steel having the characteristics specified in ANSI/AWWA C111/A21.11, regardless of any other protective coating.

2.03 FUSION PROCESS

A. General

1. FPVC pipe will be handled in a safe and non-destructive manner before, during, and after the fusion process and in accordance with this specification and pipe supplier's guidelines.

2. FPVC pipe will be fused by qualified fusion technicians, as documented by the pipe supplier.
 3. Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) connected to the fusion machine.
 4. Only appropriately sized and outfitted fusion machines that have been approved by the pipe supplier shall be used for the fusion process. Fusion machines must incorporate the following elements:
- B. Heat Plate—Heat plates shall be in good condition with no deep gouges or scratches. Plates shall be clean and free of any debris or contamination. Heater controls shall function properly; the cord and plug shall be in good condition. The appropriately sized heat plate shall be capable of maintaining a uniform and consistent heat profile and temperature for the size of pipe being fused, according to the pipe supplier's guidelines.
- C. Carriage—Carriage shall travel smoothly with no binding at less than 50 psi. Jaws shall be in good condition with proper inserts for the pipe size being fused. Insert pins shall be installed with no interference to carriage travel.
- D. General Machine—Overview of machine body shall yield no obvious defects, missing parts, or potential safety issues during fusion.
- E. Data Logging Device—An approved data-logging device with the current version of the pipe supplier's recommended and compatible software shall be used. Data-logging device operations and maintenance manual shall be with the unit at all times. If fusing for extended periods, an independent 110V power source shall be available to extend battery life.
- F. Other equipment specifically required for the fusion process shall include the following:
1. Pipe rollers shall be used for support of pipe to either side of the machine.
 2. A weather-protection canopy that allows full machine motion of the heat plate, fusion assembly, and carriage shall be provided for fusion in inclement, extreme temperatures, and /or windy weather, in accordance with the pipe supplier's recommendations.
 3. An infrared (IR) pyrometer shall be used to check pipe and heat plate temperatures.
 4. Fusion machine operations and maintenance manual shall be kept with the fusion machine at all times.
 5. Facing blades specifically designed for cutting FPVC pipe shall be used.
- G. Joint Recording—Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) connected to the fusion machine. The fusion data

logging and joint report shall be generated by software developed specifically for the butt-fusion of FPVC pipe. The software shall register and/or record the parameters required by the pipe supplier and these specifications. Data not logged by the data logger shall be logged manually and be included in the Fusion Technician's joint report.

2.04 BORING EQUIPMENT (NOT USED)

PART 3 EXECUTION

3.01 DIRECTIONAL DRILLING (NOT USED)

3.02 DRILLING FLUIDS AND THEIR DISPOSAL (NOT USED)

3.03 CHECKING AND CLEANING

- A. The pipe shall be checked for any flaws in manufacturing before and after installation.
- B. The installed and successfully checked pipeline shall be cleaned with stiff brushes followed by a swabbing mandrel sufficient to remove all debris including soils.

3.04 HYDROSTATIC TESTING AND LEAKAGE TESTING FOR PRESSURE PIPING

- A. Hydrostatic and leakage testing for piping systems that contain mechanical jointing as well as fused PVC jointing shall comply with AWWA C605.
- B. To prepare for pressure testing, the following parameters must be followed:
 - 1. All air must be vented from the pipeline before pressurization. This may be accomplished using air-relief valves or corporation stop valves, vent piping in the testing hardware or end caps, or any other method that adequately allows air to escape the pipeline at all high points. Venting may also be accomplished by 'flushing' the pipeline in accordance with the parameters and procedures as described in AWWA C605.
 - 2. The pipeline must be fully restrained before pressurization. This includes complete installation of all mechanical restraints in accordance with the restraint manufacturer's guidelines, whether permanent or temporary to the final installation. This also includes installing and curing all required thrust blocking. All appurtenances included in the pressure test, including valves, blow-offs, and air-relief valves, shall be checked for proper installation and restraint before the test begins.

3. Temporary pipeline alignments that are being tested, such as those that are partially installed in their permanent location, shall be configured to minimize the amount of potentially trapped air in the pipeline.

END OF SECTION

SECTION 15155 DUCTILE IRON FITTINGS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall provide all materials and incidentals, including fittings, flanged joints, mechanical joints, retainer glands, polyethylene bagging for buried ductile iron fittings, valves, and appurtenances for the piping systems required for the work shown on the Drawings, in the Drawing—Piping Schedule.

1.02 RELATED WORK

- A. Section 01330, Submittals and Acceptance.
- B. Section 01650, Delivery, Storage, and Handling.
- C. Section 02305, Earthwork for Utilities.
- D. Section 15055, Piping Systems—General.
- E. Section 15141, Disinfection of Piping and Water Storage Facilities.
- F. Section 15144, Pressure Testing of Piping.

1.03 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance:

- A. All ductile iron fittings to be installed under this Contract shall be inspected and tested at the foundry where the material for this project is manufactured. The Contractor shall submit sworn certificates of such tests and their results.
- B. Shop Drawings, including layout drawings, shall be submitted as specified in Section 15055, Piping Systems—General.
- C. The Contractor shall submit the pipe manufacturer's certification of compliance with the applicable Sections of the Specifications.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a

part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

A. American National Standard Institute (ANSI)

1. ANSI A21.11—Rubber Gasket Joints Cast & Ductile Iron Pressure Pipe.
2. ANSI A21.53—Ductile-Iron Compact Fittings, 3-Inch through 24-Inch (76mm through 610mm) and 54-Inch through 64-Inch (1,400mm through 1,600mm), for Water Service.
3. ANSI B1.1—Unified Inch Screw Threads (UN & UNR Thread Form).
4. ANSI B16.1—Cast Iron Pipe Flanges and Pipe Fittings.
5. ANSI B16.21—Nonmetallic Flat Gaskets for Pipe Flanges.

B. American Society for Testing and Materials (ASTM)

1. ASTM A193—Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service.
2. ASTM A194—Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service, or Both.
3. ASTM A307—Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
4. ASTM A536—Standard Specification for Ductile Iron Castings.
5. ASTM A563—Standard Specification for Carbons and Alloy Steel Nuts.
6. ASTM B117—Standard Practice for Operating Salt Spray (Fog) Apparatus.
7. ASTM C150—Standard Specification for Portland Cement.
8. ASTM C283—Standard Test Methods for Resistance of Porcelain Enameled Utensils to Boiling Acid.
9. ASTM D714—Standard Test Method for Evaluating Degree of Blistering of Paints.
10. ASTM D792—Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
11. ASTM D1238—Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer.
12. ASTM E96—Standard Test Methods for Water Vapor Transmission of Materials.
13. ASTM G95—Standard Test Method for Cathodic Disbondment Test of Pipeline Coatings (Attached Cell Method).

C. American Water Works Association (AWWA)

1. AWWA C104—Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.

2. AWWA C110—Ductile-Iron and Gray-Iron Fittings, 3-Inch through 48-Inch (75mm through 1200mm) for Water and Other Liquids.
3. AWWA C111—Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
4. AWWA C115—Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
5. AWWA C150—Thickness Design of Ductile-Iron Pipe.
6. AWWA C151—Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids.
7. AWWA C153—Ductile-Iron Compact Fittings, 3-Inch through 16-Inch (76mm through 610mm), for Water and Other Liquids.
8. AWWA C207—Steel Pipe Flanges for Waterworks Service Sizes 4-Inch through 144-Inch (100mm through 3,600mm).
9. AWWA C600—Installation of Ductile-Iron Water Mains and their Appurtenances.
10. AWWA C651—Disinfecting Water Mains.

D. International Organization for Standardization (ISO)

1. ISO-9001—Quality Systems – Model for Quality Assurance in Production, Installation, and Servicing.

E. NSF International (NSF)

1. NSF 61—Drinking Water System Components – Health Effects.

1.06 QUALITY ASSURANCE

A. Source Quality Control:

1. The ductile iron pipe manufacturer shall submit certification fitting products meet all tests required by AWWA C151.
2. All materials shall be new and have a manufacturer's certificate verifying compliance to all tests and inspections as required in this Section. The weight, class, and casting period shall be shown on each piece of pipe. The manufacturer's "mark," the year produced, and the word "Ductile" or the letters "DI" shall be cast or stamped on all pipe.

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 TESTING REQUIREMENTS

- A. See Section 15144, Pressure Testing of Piping, for testing requirements.

1.11 MAINTENANCE (NOT USED)

1.12 OPERATIONS AND MAINTENANCE (O&M) MANUALS (NOT USED)

PART 2 PRODUCTS

2.01 JOINTS

- A. Ductile iron fittings shall be furnished with mechanical joints ends as shown on the Drawings and specified in this Section:
 - 1. Mechanical Joints: All buried ductile iron fittings shall be furnished with mechanical joint ends unless noted otherwise. Mechanical joints shall conform to ANSI A21.11/AWWA C111. Glands shall be constructed of ductile iron.

2.02 FITTINGS

- A. General: Ductile iron pipe fittings shall be the compact type meeting the requirements of ANSI/AWWA C110 and C153 where applicable. Ductile iron, cement lined and seal coated. Fittings shall be manufactured in accordance with ANSI/AWWA C110.
 - 1. Mechanical Joint: ANSI/AWWA C110/A21.10
 - a. Provide mechanical joint fittings for all buried fittings as shown in the Drawings, unless noted otherwise.
 - b. Provide specified gaskets.

2.03 LINING AND COATING

- A. The Contractor shall provide lined ductile iron fittings in accordance with the Drawings. The Contractor shall perform all field measurements confirming the accuracy of the piping sizes and lengths shown on the Drawings. The Contractor shall notify the Engineer immediately before deviating from or altering the lining shown on the approved layout schedule.
- B. Cement-Lined Ductile Iron Fittings: Interior surfaces of all cement-lined ductile iron fittings and specials shall be cleaned and lined in the shop with a standard thickness cement-mortar lining applied in conformity with AWWA C104, Portland cement mortar. Every precaution shall be taken to prevent damage to the lining. If lining is damaged or found faulty at delivery site, the Contractor shall repair or replace damaged or unsatisfactory portions with lining conforming to these Specifications at no additional cost to the Owner. Linings for potable water lines shall be NSF 61 approved.

2.04 MANUFACTURERS

- A. Acceptable ductile iron fitting manufacturers include US Pipe, American Ductile Pipe, Griffin Pipe, or approved equal.

2.05 BOLTS

- A. General: The Contractor shall provide carbon steel, ASTM A307, Grade A hex head bolts and ASTM A563, Grade A hex head nuts. Threads shall be as specified in ANSI B1.1 coarse thread series, Class 2A external and Class 2B internal. Nuts, bolts, and gaskets for flanged fittings and blind flanges shall be designed to withstand the design and test pressure ratings for the pipe.

2.06 GASKETS

- A. Gaskets for mechanical joints shall be compatible with potable water pipe service. See Section 15055, Piping System—General, for gasket requirements.

2.07 RETAINER GLANDS

- A. Retainer glands shall be provided for all buried ductile-iron mechanical joints, fittings, and ductile-iron pipe connections to buried valves. Retainer glands shall be designed for joint retaining through the use of a follower gland and set screw-anchoring devices that impart multiple wedging action against the pipe. The

mechanical joint-restraint device shall be UL listed and shall have a working pressure of at least 250 psi with a minimum safety factor of 2.

1. Gland: Manufactured of ductile iron conforming to ASTM A536. Gland dimensions shall match ANSI A21.11 and A21.53.
2. Restraining Devices: Manufactured of ductile iron heat treated to a minimum hardness of 370 BHN. Restraining devices shall incorporate a set screw/twist-off nut bolt to ensure the proper actuating of the restraining device. The twist-off nut shall be designed to come off at the torque limit desired to anchor the restraining device in place on the pipe.
3. Joint Deflection: Retainer gland joint deflection shall be limited to manufacturer's recommended maximum deflection angle. Joint deflection shall be applied before the set screws are torqued.
4. Acceptable Manufacturers:
 - a. EBAA Iron, Inc. – Megalug 1100 Series.
 - b. Or approved equal.

2.08 EXTERNAL PIPE RESTRAINTS (NOT USED)

2.09 INTERNAL PIPE RESTRAINT

A. Acceptable Manufacturers:

1. American Ductile Iron Pipe:
 - a. Fast Grip ® Gasket.
 - b. Flex Ring ® Joint.
2. US Pipe:
 - a. Field Lok ® Gasket.
 - b. TR Flex Restrained Joint Pipe and Fittings.
3. Or Engineer-approved equal.

2.10 POLYETHYLENE BAGGING

- ### A. Polyethylene bagging for buried ductile iron fittings and valves shall be 8 mils thickness minimum polyethylene, manufactured in accordance with ASTM D1238, Type I, Class C, Grade E1.

2.11 COLOR CODING OR MARKING

- A. All potable water main pipe, including fittings, shall be color coded or marked using blue as a predominant color to differentiate drinking water from reclaimed or other water.

PART 3 EXECUTION

3.01 HANDLING PIPE AND FITTINGS

- A. Care shall be taken in loading, transporting, and unloading to prevent injury to the fitting, lining, and coating. Fittings shall not be dropped. All fittings shall be examined before installation, and no piece that the Engineer finds defective shall be installed. The Contractor shall repair any damage to the pipe and fittings coating and/or lining as directed by the Engineer. If the Engineer determines that the coating and/or lining cannot be repaired, the Contractor shall replace the damaged pipe and fittings at no additional compensation.
- B. All fittings shall be subjected to a careful inspection immediately before installation.
- C. If any defective fitting is discovered after it has been installed, the Contractor shall remove and replace it with a fitting in satisfactory condition at no additional expense to the Owner.

3.02 FITTING INSTALLATION

- A. The Contractor shall provide and use proper implements, tools, and facilities for the safe and convenient performance of the work. All fittings, valves, and appurtenances shall be lowered carefully into the trench and at above-grade locations to prevent damage to the pipe, protective coating, lining, and polyethylene bagging. Under no circumstances shall materials be dropped off or dumped. A trench shall be dewatered before the fittings are installed.
- B. The Contractor shall carefully examine all fittings, valves, and other appurtenances for damage and other defects immediately before installation and before bagging buried ductile-iron pipe. The Contractor shall mark and hold defective materials for inspection by the Engineer, who may prescribe corrective repairs or reject the materials.
- C. Trench width at the top of pipe, bedding conditions, and backfill placement and compaction shall be such that design loadings on the pipe will not be exceeded.

- D. Joint Assembly: Pipe joints shall be assembled in accordance with the manufacturer's instructions and the requirements of ANSI/AWWA C600.
 - 1. Push-On, Restrained Joint, or Mechanical Joint: The Contractor shall join piping in accordance with the manufacturer's recommendations. Provide all special tools and devices, such as special jacks, chokers, and similar items required for proper installation. Lubricant for the pipe gaskets shall be furnished by the pipe manufacturer, and no substitutes will be permitted under any circumstance.
- E. Pipe Deflection: When it is necessary to deflect pipe from a straight line in either the vertical or horizontal plane or where long radius curves are permitted, the amount of deflection shall not exceed that shown in ANSI/AWWA C600 and that recommended by the retainer gland manufacturer for mechanical joint pipe and fittings.

3.03 SURFACE PREPARATION AND PAINTING

- A. All buried steel bolts, nuts, washers, rods, harnesses, clamps, sleeves, and appurtenances shall be painted as specified in Section 09900, Painting and Coating.

3.04 INSPECTION, TESTING, AND DISINFECTION

- A. See Section 15055, Piping Systems—General; Section 15141, Disinfection of Piping and Water Storage Facilities; and Section 15144, Pressure Testing of Piping.

END OF SECTION

SECTION 15291
POLYVINYL CHLORIDE (PVC) PRESSURE PIPE AND FITTINGS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section covers the work necessary to furnish, install, and complete the AWWA C900 DR 18 PVC pipe and ductile iron fittings specified.

1.02 RELATED WORK

- A. Section 01330, Submittals and Acceptance.
- B. Section 02305, Earthwork for Utilities.
- C. Section 15155, Ductile Iron Fittings.

1.03 SUBMITTALS

The Contractor shall submit shop drawings in accordance with Section 01330, Submittals and Acceptance:

- A. All PVC pipe and fittings to be installed under this Contract shall be inspected and tested at the location where the material for this project is manufactured. The Contractor shall submit certificates of such tests and their results.
- B. The Contractor shall submit the pipe manufacturer's certification of compliance with the applicable sections of the Specifications.

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS

Reference standards and recommended practices referred to in this Specification Section shall be the latest revision of any such document in effect at the bid time. The following documents are a part of this Section. Where this Section differs from these documents, the requirements of this Section shall apply.

- A. American Society of Testing Materials (ASTM)
 - 1. ASTM A242—Standard Specification for High-Strength Low-Alloy Structural Steel.
 - 2. ASTM A536—Standard Specification for Ductile Iron Castings.

3. ASTM D2241—Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
4. ASTM F477—Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

B. American Water Works Association (AWWA)

1. AWWA C900—Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 inch to 12 inch (100 mm to 300 mm), for Water Transmission and Distribution.
2. AWWA C905—Polyvinyl Chloride (PVC) Water Transmission Pipe, Nominal Diameters 14 inch through 36 inch.

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 TESTING REQUIREMENTS (NOT USED)

1.11 MAINTENANCE (NOT USED)

1.12 OPERATIONS AND MAINTENANCE (O&M) MANUALS (NOT USED)

PART 2 PRODUCTS

2.01 LARGE PVC PRESSURE PIPE

A. Large PVC Pressure Piping:

1. Unless otherwise noted, PVC pressure pipe for nominal diameters 4 inches and larger shall conform to the requirements of AWWA C900 DR 18 up to 12 inches and AWWA C905 DR 18 larger than 12 inches with gasketed integral bell ends. Pipe shall be designed for maximum working pressure

of not less than 150 psi. Pipe shall be made to ductile iron pipe ODs instead of IPS. The PVC pipe shall be blue and NSF approved for potable water use and purple for reclaimed water use.

B. Bell and Spigot:

1. Pipe joints shall be made with integral bell and spigot pipe ends. The bell shall consist of an integral thickened wall section designed to be at least as strong as the pipe wall. The bell shall be supplied with a factory glued rubber ring gasket that conforms to the manufacturer's standard dimensions and tolerances. The gasket shall meet the requirements of ASTM F477. PVC joints shall be "Ring-Tite" as manufactured by J-M Manufacturing Company, Inc. or an equal approved by the Engineer. Nontoxic gasket lubricant shall be as specified by the pipe manufacturer.

C. Restrained Joints:

1. The following pipe joints and fittings restraint methods can be used to prevent pipe joints and fittings from separating under pressure. No additional financial compensation will be provided to the Contractor for providing the following methods of restraint:
 - a. C-900 PVC pipe bell and spigot joints (4-inch- through 12-inch-diameter pipe) shall be restrained with the EBAA Iron MEGALUG® Series 1600 Restrainer or an equal approved by the Engineer. The Series 1600 restrainers shall provide a minimum of 150-psi restraint to DR 18 (Class 150) pipe with a 3 to 1 safety factor. C-905 PVC pipe bell and spigot shall be restrained with the EBAA Iron MEGALUG® Series 2800 Restrainer or an equal approved by the Engineer. The Series 2800 restrainers shall provide a minimum of 200 psi restraint to DR 18 (Class 235) pipe with a 2 to 1 safety factor. The restraining device and tee head bolts shall be manufactured of high-strength ductile iron meeting ASTM A536, Grade 65-42-10. Clamping bolts and nuts shall be manufactured of corrosion-resistant, high-strength, low-alloy CORTEN steel meeting the requirements of ASTM A242.
 - b. Mechanical joint fittings used with PVC pipe (3-inch- through 36-inch-diameter DR 18 pipe) shall be restrained with the EBAA Iron MEGALUG® Series 2000 PV Restrainer or an equal approved by the Engineer. The Series 2000 PV restrainers shall provide a minimum of 150-psi restraint with a 2 to 1 safety factor. The restraining device and Tee head bolts shall be manufactured of high-strength ductile iron meeting ASTM A536, Grade 65-42-10. Clamping bolts and nuts shall be manufactured of corrosion-

resistant, high-strength, low-alloy CORTEN steel meeting the requirements of ASTM A242.

- c. All parts of the joint restraint systems shall be coated with coal tar epoxy as in Section 09900, Painting and Coating, Mega-Bond coating system by EBAA Iron, Inc. or Engineer-approved equal.

2.02 LARGE PVC PRESSURE PIPE FITTINGS

- A. Fittings for use with large PVC pipe shall be ductile-iron fittings conforming to the requirements of mechanical joint fittings as specified in Section 15155, Ductile Iron Fittings.
- B. Exterior Coating
 - 1. Exterior coating for fittings shall be as specified in Section 15155, Ductile Iron Fittings.
- C. Lining
 - 1. Lining for fittings shall be as specified in Section 15155, Ductile Iron Fittings.
 - 2. Any damaged lined areas shall be repaired in accordance with the manufacturer's recommendations so that the repaired area is equal to the undamaged lined areas.

2.03 SMALL PVC PRESSURE PIPE (NOT USED)

PART 3 EXECUTION

3.01 EXAMINATION

- A. The Contractor shall examine pipe and appurtenances shall be examined at the point of delivery. Material found to be defective due to manufacture or damage in shipment shall be rejected. Tests as specified in the applicable material standard may be performed to ensure conformance with the standard.

3.02 PIPE INSTALLATION

- A. Proper implements, tools, and facilities shall be provided and used for the safe and convenient performance of the work. All pipe, fittings, and valves shall be lowered carefully into the trench using suitable tools or equipment to prevent damage to pipeline materials. Under no circumstances shall pipeline materials be dropped or dumped into the trench. The trench shall be dewatered before installing the pipe in accordance with the Specifications.

- B. The sealing surface of the pipe, the inside of the bell, and the inside of the gasket shall be cleaned immediately before assembly.
- C. Foreign material shall be prevented from entering the pipe while it is being placed in the trench. During laying operations, no debris, tools, clothing, or other materials shall be placed in the pipe.
- D. As each length of pipe is placed in the trench, the joint shall be assembled and the pipe brought to correct line and grade. The pipe shall be secured in place with approved backfill material.
- E. At all times when pipe laying is in progress, except when joining another piece of pipe, the open ends of the pipe shall be closed by a watertight plug or other means approved by the Engineer to prevent the entrance of objectionable materials. Care shall be taken to prevent pipe flotation.
- F. Trench width at the top of the pipe, bedding conditions, and backfill placement and compaction shall be in accordance with the Contract Documents.
- G. Joint Assembly
 - 1. Pipe joints shall be assembled in accordance with the manufacturer's instructions.
- H. Pipe Deflection
 - 1. When it is necessary to deflect pipe from a straight line in either the vertical or horizontal plane, the amount of deflecting shall not exceed 75% of that recommended by the manufacturer.
- I. Pipe Cutting
 - 1. Cutting pipe for the insertion of valves, fittings, or closure pieces shall be done in a neat, workmanlike manner without creating damage to the pipe. Ends shall be cut square and perpendicular to the pipe axis.
 - 2. Burrs shall be removed from spigots, and ends shall be smoothly beveled. Field cut ends shall be marked for proper depth of joint assembly.
- J. Thrust Restraint
 - 1. All pipe, tees, valves, bends, and etc., unless otherwise specified, shall be restrained using mechanical means as specified. Pipe restraint using the specified mechanical restraining system with the restrained joint schedule

or tie-rods is also acceptable. Reaction blocking shall not be used on this project.

2. All ductile iron fittings, valves, mechanical restraint harnesses, and other forms of mechanical restraint shall be installed and wrapped in polyethylene tube material as specified in Section 15155, Ductile Iron Fittings.

3.03 LOCATION AND IDENTIFICATION

- A. All non-metallic potable water mains shall be installed with a continuous, insulated 12-gauge copper wire installed directly on top of pipe for location purposes.
- B. All PVC potable water mains shall be a solid blue color. All lettering shall appear legibly on pipe and shall run the entire length of the pipe. Lettering shall be appropriate for the intended use.

3.04 TESTING

- A. All lines shall be tested at the pressures listed in the Pipe Schedule (DWG. No. G5).
- B. See Section 15144, Pressure Testing of Piping, for the requirements of pipe flushing, cleaning, pressure and leakage testing, and inspection requirements.
- C. See Section 15141, Disinfection of Piping and Water Storage Facilities, for the disinfection requirements.

END OF SECTION

APPENDIX A

GEOTECHNICAL ENGINEERING SERVICES
REPORT
TIERRA, NOVEMBER 13, 2017

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TIERRA

November 13, 2017

Jones Edmunds & Associates, Inc.
5104 N. Lockwood Ridge Rd., Suite 307
Sarasota, Florida 34234

Attn: Douglas R. Young, P.E.
Cc: John A. Banks, Jr., P.E.

**RE: Geotechnical Engineering Services Report
East Gate Terrace Phase 1 Water and Sewer Main Replacement
City of Venice, Florida
City of Venice CIP No. 95944
Tierra Project No. 6511-17-085**

Mr. Young:

Tierra, Inc. (Tierra) has completed the geotechnical engineering study for the above referenced project. The results of the study are provided herein.

Should there be any questions regarding this report, please do not hesitate to contact our office at (813) 989-1354. We look forward to working with you and your organization on this and future projects.

Respectfully Submitted,

TIERRA, INC.



Kaitlyn C. Waterman
Engineering Assistant



Michael T. Jordan, P.E.
Senior Project Engineer
Florida License No. 56102

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PROJECT DESCRIPTION

Project Information

The project consists of infrastructure improvements within the East Gate Terrace residential subdivision located in Venice, Florida. The proposed improvements include the replacement of the existing water and sewer mains and related service connections on Cypress Avenue and Laurel Avenue. Based on our understanding, construction will consist of conventional open cut and cover pipe installation with shallow horizontal directional drilling (HDD) at selected cross roads.

Scope of Services

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

1. General location and description of potentially deleterious materials discovered in the borings which may interfere with the HDD and conventional cut and cover pipe installation including unsuitable soil, dense soil materials, rock, shell or other detrimental materials.
2. Identification of groundwater levels.

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

1. Reviewed published soils and topographic information. This published information was obtained from the "Venice, Florida" Quadrangle Map published by the United States Geological Survey (USGS) and the Soil Survey of Sarasota County, Florida, published by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS).
2. Executed a program of subsurface exploration consisting of borings, subsurface sampling and field testing. Tierra performed ten (10) Standard Penetration Test (SPT) borings to depths ranging from approximately 10 to 14 feet below the ground surface.
3. Visually classified the samples in the laboratory using the Unified Soil Classification System (USCS). Identified soil conditions at each boring location and performed laboratory testing on selected soil samples.
4. Collected groundwater level measurements.

5. Prepared this formal engineering report that summarizes the course of study pursued, the field data generated, subsurface conditions encountered and our engineering recommendations in each of the pertinent topic areas.

SITE INFORMATION AND SUBSURFACE CONDITIONS

General Site Information and USGS Quadrangle Map

The project site is located in Venice, Florida in the East Gate Terrace community. Land use in the project vicinity typically consists of residential developments. Based on the "Venice, Florida" USGS Quadrangle Map, the natural ground elevations along the project alignment range from approximately +10 to +15 feet, National Geodetic Vertical Datum of 1929 (NGVD 1929). A reproduction of the **USGS Quadrangle Map** for the project is provided in the **Appendix**.

USDA Soil Survey of Sarasota County, Florida

The USDA Soil Survey of Sarasota County, Florida was reviewed for near surface soil and groundwater information within the project vicinity. The Soil Survey identifies three (3) major soil-mapping units along the project alignment. A reproduction of the **USDA Soil Survey Map** is included in the **Appendix**. Descriptions of the soil-mapping units within the project vicinity as provided in the Soil Survey are included in the **Summary of USDA Soil Survey** in the **Appendix**.

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

Subsurface Conditions

Prior to commencing our subsurface explorations, a boring location plan was developed based on project information provided by Jones Edmunds & Associates, Inc. The borings were located in the field using hand-held non survey grade Garmin eTrex Global Positioning System (GPS) equipment with a reported accuracy of ± 10 feet. Generally, the borings were performed at the proposed boring locations. When not possible due to access or utility constraints, the boring locations were altered and the relocated GPS coordinates were recorded on the field boring logs. The approximate boring locations are presented on the **Boring Location Plan** in the **Appendix**.

The subsurface conditions along the project alignment were explored using ten (10) SPT borings performed to depths ranging from approximately 10 to 14 feet below existing site grades. Two boring locations were terminated in refusal material at depths ranging from 1 to 2 feet below the ground surface when manually hand augering to verify utility clearance. The SPT borings were performed with the use of a drill rig using Bentonite Mud drilling procedures. The soil sampling was performed in general accordance with American Society for Testing and Materials (ASTM) Test Designation D-1586 titled "Penetration Test

and Split-Barrel Sampling of Soils.” The initial 4 feet of the SPT borings were manually augered to verify utility clearance. Thereafter, SPT resistance N-values were recorded and soil samples were collected continuously from a depth of 4 feet to the boring termination depths. The soil samples were classified in the field and transported to our laboratory for review. The soil strata encountered in the borings performed at the proposed project site are summarized in the following table:

Stratum Number	Soil Description	USCS Symbol
1	Gray to Brown to Dark Brown SAND to SAND with Silt	SP/SP-SM
2	Gray to Brown Silty SAND, Occasionally with Shell	SM
3	Gray to Brown Cemented SAND to Cemented SAND with Silt, Shell and Weathered Limestone Fragments	SP/SP-SM
4	Gray to Brown Clayey SAND	SC

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

Groundwater Information

At the time of our field activities, the groundwater table was measured within the SPT borings at depths ranging from approximately 2 to 4½ feet below existing grades. The encountered groundwater levels are presented adjacent to their respective soil profiles on the **Soil Profiles** sheet in the **Appendix**. The groundwater table was not encountered within auger Borings B-4 and B-5 prior to termination of the borings. As a result, Groundwater Not Encountered (GNE) is depicted adjacent to these soil profiles on the **Soil Profiles** sheet in the **Appendix**.

It should be noted that groundwater levels tend to fluctuate during periods of prolonged drought and extended rainfall and may be affected by man-made influences. In addition, a seasonal effect will also occur in which higher groundwater levels are normally recorded in rainy seasons.

Environmental Classification

Laboratory environmental classification tests were performed on soil samples obtained from the SPT borings performed along the project alignment to determine the substructure environmental classification. The environmental classification tests were conducted in general accordance with the Florida Department of Transportation (FDOT) test designations FM 5-550, FM-5-551, FM-5-552 and FM-5-553. The environmental classification test results are provided on the **Soil Profiles** sheet in the **Appendix**.

EVALUATION AND RECOMMENDATIONS

General

The following report sections provide our evaluations and recommendations for the proposed water and sewer main replacements. Tierra recommends utilizing the applicable City, County and/or FDOT Specifications for construction of the proposed improvements. It should be noted that if final design criteria deviates from what is stated in this report, Tierra should be given the opportunity to review the new information and amend our recommendations, if necessary.

On-Site Soil Considerations

The material from Strata 1 and 2 appear to be suitable for pipe bedding and trench backfilling operations. All materials to be used for pipe bedding, fill or backfill should be evaluated and, if necessary, tested by Tierra prior to placement to determine if they are suitable for the intended use. Suitable fill materials should consist of material in accordance with applicable City, County and/or FDOT Specifications and be free of rubble, organics, debris and other unsuitable material.

The material from Stratum 4 is plastic soil. Although this material may remain in place, Stratum 4 soils can be moisture sensitive due to their fines content, making compaction requirements difficult to achieve. As a result, over-excavation and replacement of Stratum 4 soils may be required. If excavated, this material may be used as general pipe backfill in accordance with City, County and/or FDOT Specifications provided that compaction requirements are met. If excavated, it should not be re-used as pavement backfill or placed within the influence of the pavement.

Hard material consisting of cemented sand to cemented sand with silt, shell and weathered limestone fragments (Stratum 3) was encountered within Borings B-3, B-4, B-4A, B-5 and B-5A. Stratum 3 material was encountered within these borings at depths ranging from the ground surface to 6 feet below existing site grades. If this material is encountered during the HDD operations, the Contractor shall anticipate that drilling and reaming through and within this material may be difficult and require non-conventional construction techniques and specialized equipment. The depth and consistency of this material may vary.

In addition, loose to very loose sandy soils with occasional shell fragments were encountered within the SPT borings performed along the project alignment. Due to the loose shelly soils encountered and high permeability rates reported in the USDA Soil Survey, the Contractor should anticipate higher than normal circulation losses of drilling fluid during the HDD operations. Additionally, if this material is encountered during pipe trench excavations, dewatering will be difficult and may require non-conventional dewatering methods.

Drainage and Groundwater Concerns

As mentioned above, the groundwater table was measured at depths ranging from approximately 2 to 4½ feet below existing grades. The groundwater levels presented in this report are the levels that were measured at the time of our field activities and fluctuation should be anticipated. We recommend that the Contractor determine the actual groundwater levels at the time of the construction to determine groundwater impact on his construction procedure. Care should be given to open excavations and site grading to minimize ponding of surface water.

Based on a review of the "Potentiometric Surface of the Upper Floridan Aquifer, West-Central Florida" map published by the USGS; the potentiometric surface elevation of the upper Floridan Aquifer in the project vicinity ranges from approximately +20 to +30 feet, NGVD 1929. Artesian conditions were not encountered at the time of our field activities; however, the Contractor's tools and construction methods should be prepared to handle potentiometric surface levels of up to an elevation of +30 feet, NGVD 1929 at no additional cost to the owner.

Temporary Side Slopes & Excavations

Temporary side slopes and excavations should comply with the Occupational Safety and Health Administration's (OSHA) trench safety standards, 29 C.F.R., s. 1926.650, Subpart P, all subsequent revisions or updates of OSHA's referenced standard adopted by the Department of Labor and Employment Security and Florida's Trench Safety Act, Section 553.62, Florida Statutes. Excavated materials should not be stockpiled at the top of the slope within a horizontal distance equal to the excavation depth.

REPORT LIMITATIONS

The analyses, conclusions and recommendations contained in this report are opinions based on the site conditions and project layout described herein and further assume that the conditions observed in the exploratory borings are representative of the subsurface conditions throughout the site, i.e., the subsurface conditions elsewhere on the site are the same as those disclosed by the borings. If, during construction, subsurface conditions different from those encountered in the exploratory borings are observed or appear to be present beneath excavations, we should be advised at once so that we can review these conditions and reconsider our recommendations where necessary.

If there is a substantial lapse in time between the submittal of this report and the start of work at the site, or if conditions or project layout are changed due to natural causes or construction operations at or adjacent to the site, we recommend that this report be reviewed to determine the applicability of conclusions and recommendations considering the changed conditions and time lapse.

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

This report was prepared for the exclusive use of Jones Edmunds & Associates, Inc. and their client for evaluating the design of the project as it relates to the geotechnical aspects discussed herein. It should be made available to prospective contractors for information on factual data only and not as a warranty of subsurface conditions included in this report. Unanticipated soil conditions may require that additional expense be made to attain a properly constructed project. Therefore, some contingency fund is recommended to accommodate such potential extra costs.

APPENDIX

USDA Soil Survey Map and USGS Quadrangle Map

Boring Location Plan

Soil Profiles

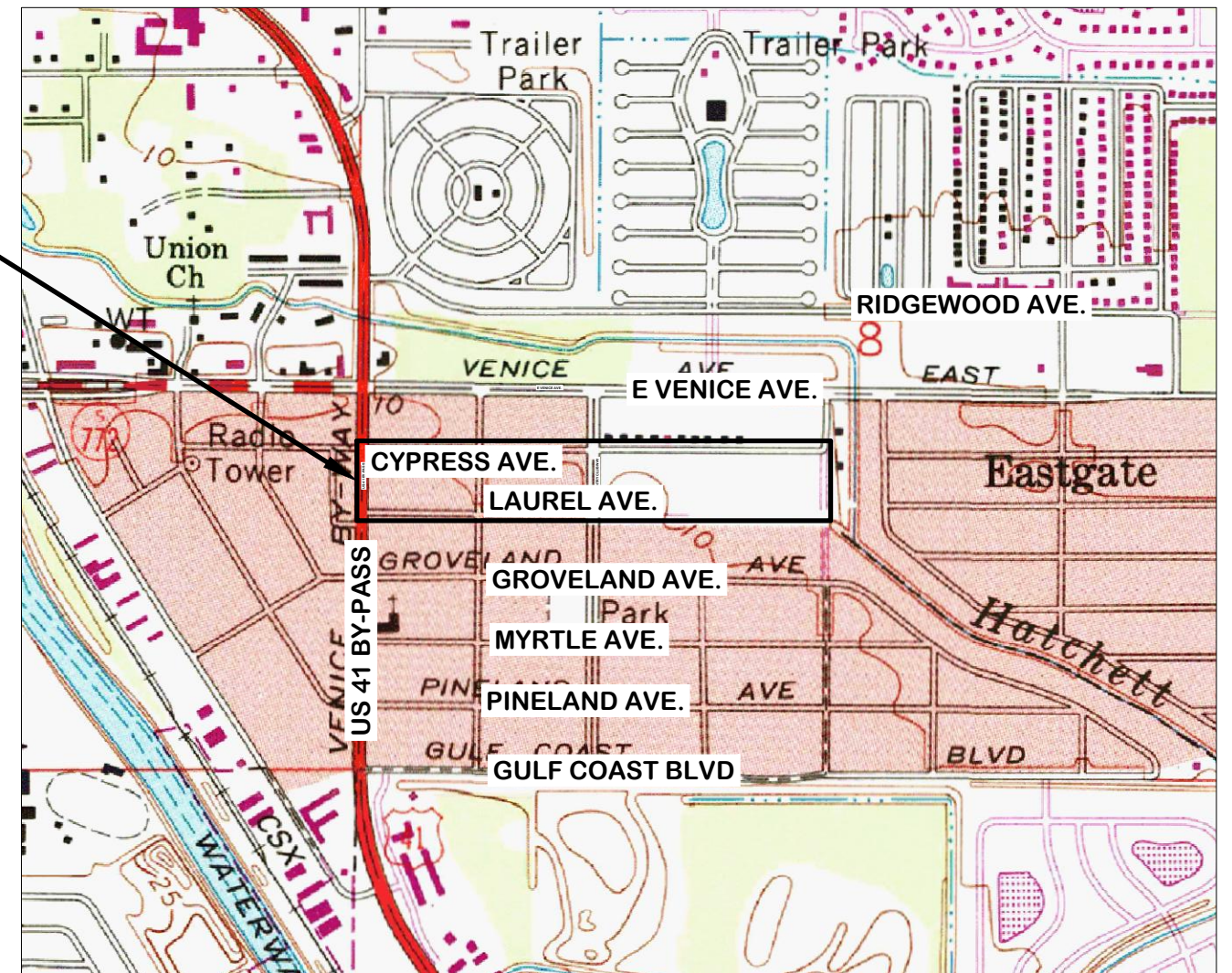
Summary of USDA Soil Survey

USDA SOIL SURVEY MAP



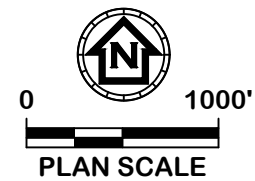
REFERENCE: USDA SOIL SURVEY OF CITY OF VENICE, FLORIDA

USGS QUADRANGLE MAP



REFERENCE: "VENICE, FLORIDA" USGS QUADRANGLE MAP

APPROXIMATE
PROJECT
LIMITS



TOWNSHIP: 39 S
RANGE: 19 E
SECTION: 8

DRAWN BY:
SW

CHECKED BY:
KW

APPROVED BY:
MTJ

DATE:
OCT 2017

ENGINEER OF RECORD:
MICHAEL T. JORDAN, P.E.
FLORIDA LICENSE NO.:
56102



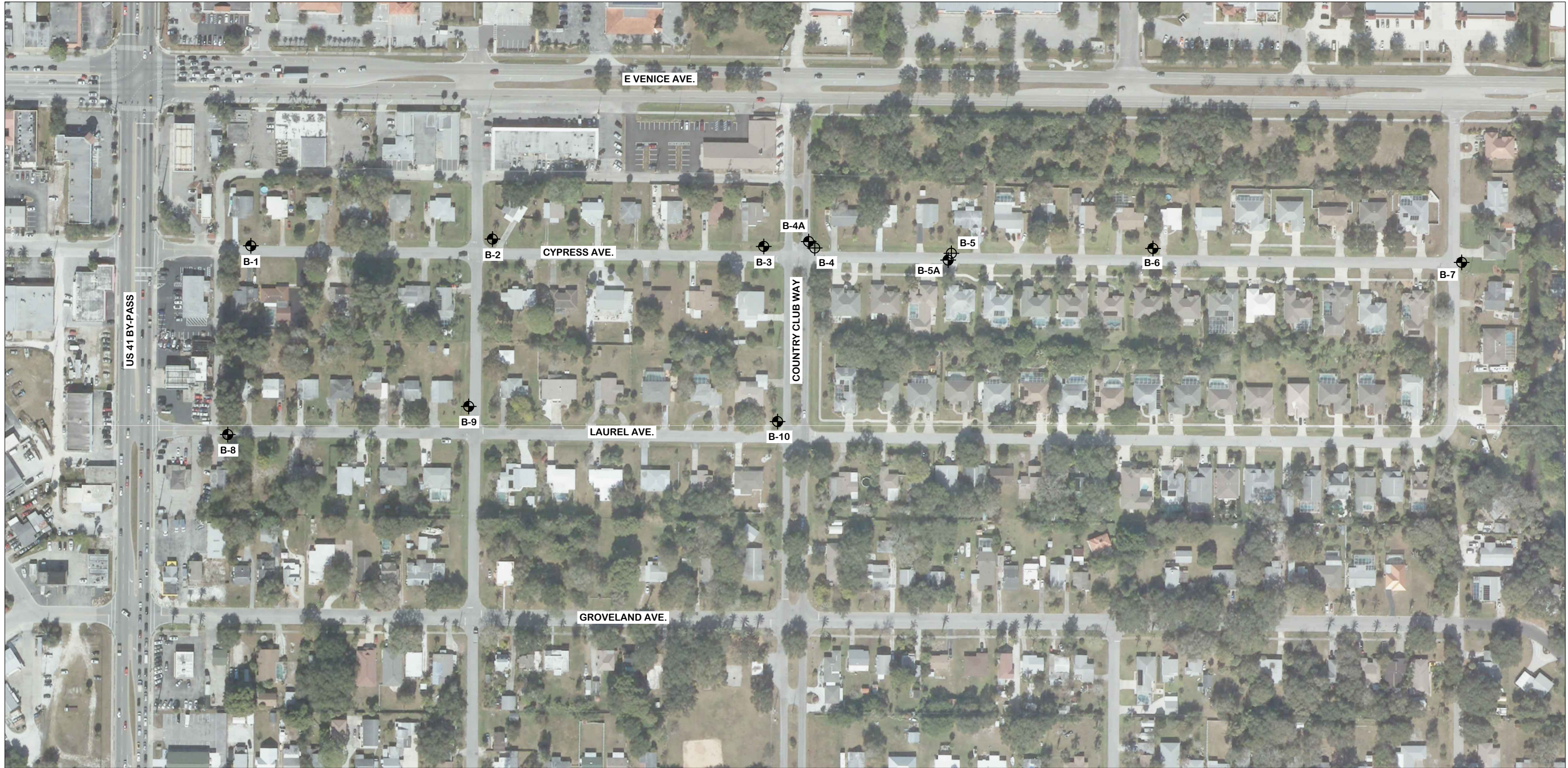
TIERRA
7351 Temple Terrace Highway
Tampa, Florida 33637
Phone: 813-989-1354 Fax: 813-989-1355
FL Cert. No.: 6486

SCALE:
NOTED

PROJECT NUMBER:
6511-17-085

GEOTECHNICAL ENGINEERING SERVICES
EAST GATE TERRACE PHASE 1
CITY OF VENICE, FLORIDA

SHEET 1



BORING LOCATION PLAN

NOTE:
THE BORINGS WERE LOCATED IN THE FIELD USING HAND-HELD NON SURVEY GRADE GARMIN ETREX GLOBAL POSITIONING SYSTEM EQUIPMENT WITH A REPORTED ACCURACY OF +/- 10 FEET.



LEGEND

- APPROXIMATE LOCATION OF AUGER BORING
- APPROXIMATE LOCATION OF SPT BORING

DRAWN BY:
SW
CHECKED BY:
KW

APPROVED BY:
MTJ
DATE:
OCT 2017

ENGINEER OF RECORD:
MICHAEL T. JORDAN, P.E.
FLORIDA LICENSE NO.:
56102



SCALE:
NOTED

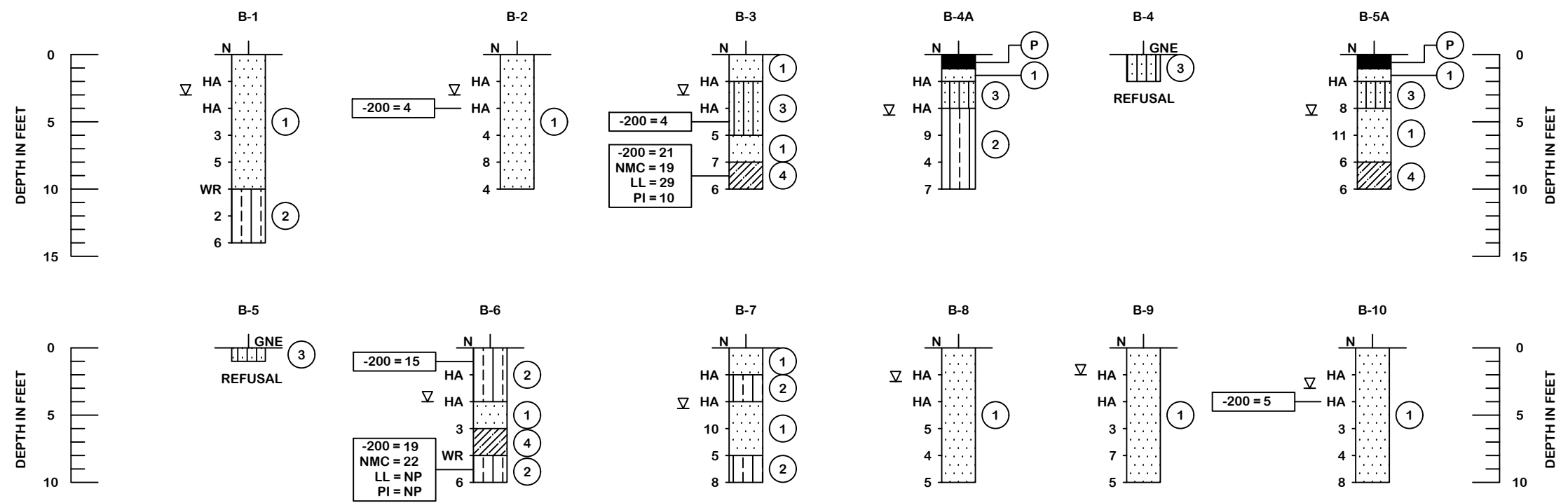
PROJECT NUMBER:
6511-17-085

GEOTECHNICAL ENGINEERING SERVICES
EAST GATE TERRACE PHASE 1
CITY OF VENICE, FLORIDA

SHEET 2

SOIL PROFILES

LEGEND



- 1 GRAY TO BROWN TO DARK BROWN SAND TO SAND WITH SILT (SP/SP-SM)
- 2 GRAY TO BROWN SILTY SAND, OCCASIONALLY WITH SHELL (SM)
- 3 GRAY TO BROWN CEMENTED SAND TO CEMENTED SAND WITH SILT, SHELL AND WEATHERED LIMESTONE FRAGMENTS (SP/SP-SM)
- 4 GRAY TO BROWN CLAYEY SAND (SC)
- P ASPHALT PAVEMENT AND BASE MATERIAL
- ▽ GROUNDWATER LEVEL ENCOUNTERED DURING INVESTIGATION
- N SPT N-VALUE IN BLOWS/FOOT FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED)
- SP UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2488) GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW
- GNE GROUNDWATER TABLE NOT ENCOUNTERED
- WR FELL UNDER WEIGHT OF ROD
- HA HAND AUGERED TO VERIFY UTILITY CLEARANCES
- NGVD 29 NATIONAL GEODETIC VERTICAL DATUM OF 1929
- REFUSAL AUGER REFUSAL ON DENSE MATERIAL
- 200 PERCENT PASSING #200 SIEVE
- NMC NATURAL MOISTURE CONTENT (%)
- LL LIQUID LIMIT (%)
- PI PLASTICITY INDEX (%)
- NP NON PLASTIC

SOIL TEST RESULTS:
RESISTIVITY 7,000 TO 24,000 OHM-CM
CHLORIDES 30 PPM
SULFATES 37 TO 36 PPM
pH 6.9 TO 7.1

NOTES:

- THE SPT BORINGS WERE PERFORMED USING AN AUTOMATIC HAMMER.
- THE MATERIAL FROM STRATA 1 AND 2 APPEAR TO BE SUITABLE FOR PIPE BEDDING AND TRENCH BACKFILLING OPERATIONS. HOWEVER, ALL MATERIALS TO BE USED FOR PIPE BEDDING, FILL OR BACKFILL SHOULD BE EVALUATED AND IF NECESSARY, TESTED BY TIERRA PRIOR TO PLACEMENT TO DETERMINE WHETHER THEY ARE SUITABLE FOR THE INTENDED USE. SUITABLE FILL MATERIALS SHOULD CONSIST OF MATERIAL IN ACCORDANCE WITH THE APPLICABLE CITY, COUNTY AND/OR FDOT SPECIFICATIONS AND SHOULD BE FREE OF RUBBLE, ORGANICS, DEBRIS AND OTHER UNSUITABLE MATERIALS.
- BORINGS B-3, B-4, B-4A, B-5 AND B-5A ENCOUNTERED HARD MATERIAL CONSISTING OF CEMENTED SAND TO CEMENTED SAND WITH SILT, SHELL AND WEATHERED LIMESTONE FRAGMENTS (STRATUM 3) AT DEPTHS RANGING FROM THE GROUND SURFACE TO 6 FEET BELOW EXISTING SITE GRADES. IF THIS MATERIAL IS ENCOUNTERED DURING THE HDD OPERATIONS, THE CONTRACTOR SHALL ANTICIPATE THAT DRILLING AND REAMING THROUGH AND WITHIN THIS MATERIAL MAY BE DIFFICULT AND REQUIRE NON-CONVENTIONAL CONSTRUCTION TECHNIQUES AND SPECIALIZED EQUIPMENT. THE DEPTH AND CONSISTENCY OF THIS MATERIAL MAY VARY.
- BASED ON A REVIEW OF THE "POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER, WEST CENTRAL FLORIDA" MAPS PUBLISHED BY THE USGS, THE POTENTIOMETRIC SURFACE ELEVATION OF THE UPPER FLORIDAN AQUIFER IN THE PROJECT VICINITY RANGES FROM APPROXIMATELY +20 TO +30 FEET, NGVD 29. ARTESIAN CONDITIONS WERE NOT ENCOUNTERED AT THE TIME OF OUR FIELD ACTIVITIES; HOWEVER, THE CONTRACTOR'S TOOLS AND CONSTRUCTION METHODS SHOULD BE PREPARED TO HANDLE POTENTIOMETRIC SURFACE LEVELS UP TO AN ELEVATION OF +30 FEET, NGVD 29 AT NO ADDITIONAL COST TO THE OWNER.
- LOOSE TO VERY LOOSE SANDY SOILS WITH OCCASIONAL SHELL FRAGMENTS WERE ENCOUNTERED WITHIN THE SPT BORINGS PERFORMED ALONG THE PROJECT ALIGNMENT. DUE TO THE LOOSE SHELLY SOILS ENCOUNTERED AND HIGH PERMEABILITY RATES REPORTED IN THE USDA SOIL SURVEY, THE CONTRACTOR SHOULD ANTICIPATE HIGHER THAN NORMAL CIRCULATION LOSSES OF DRILLING FLUID DURING THE HDD OPERATIONS. ADDITIONALLY, IF THIS MATERIAL IS ENCOUNTERED DURING PIPE TRENCH EXCAVATIONS, DEWATERING WILL BE DIFFICULT AND MAY REQUIRE NON-CONVENTIONAL DEWATERING METHODS.

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

SUMMARY OF USDA SOIL SURVEY SARASOTA COUNTY, FLORIDA							
USDA Map Symbol and Soil Name	Depth (in)	Soil Classification		Permeability (in/hr)	pH	Seasonal High Water Table	
		USCS	AASHTO			Depth (feet)	Months
(4) Bradenton	0-5	SP-SM	A-2-4, A-3	6.0 - 20.0	5.6-7.3	0.0-1.0	Aug-Sept
	5-18	SP-SM	A-2-4, A-3	6.0 - 20.0	5.6-7.3		
	18-62	SC, SC-SM	A-2-4, A-2-6	0.6 - 2.0	6.1-8.4		
	62-80	SC, SC-SM, SM, SP-SM	A-2-4, A-2-6, A-3	0.6 - 6.0	7.4-8.4		
(10) EauGallie- Myakka	0-6	SP, SP-SM	A-3	6.0 - 20.0	4.5-6.0	0.5-1.5	June-Sept
	6-22	SP, SP-SM	A-3	6.0 - 20.0	4.5-6.0		
	22-44	SM, SP-SM	A-2-4, A-3	0.6 - 6.0	4.5-6.5		
	44-48	SP, SP-SM	A-2-4, A-3	6.0 - 20.0	4.5-7.8		
	48-66	SC, SC-SM, SM	A-2-4, A-2-6	0.1 - 0.6	4.5-7.8		
	66-80	SC, SC-SM, SM	A-2-4, A-2-6	0.6 - 6.0	4.5-7.8		
	0-6	SP, SP-SM	A-3	6.0 - 20.0	3.5-6.5	0.5-1.5	June-Sept
	6-24	SP, SP-SM	A-3	6.0 - 20.0	3.5-6.5		
	24-42	SM, SP-SM	A-2-4, A-3	0.6 - 6.0	3.5-6.5		
	42-80	SP, SP-SM	A-3	6.0 - 20.0	3.5-6.5		
(22) Holopaw	0-4	SP, SP-SM	A-3	6.0 - 20.0	5.1-7.3	+2.0-1.0	June-Feb
	4-50	SP, SP-SM	A-3	6.0 - 20.0	5.1-7.3		
	50-66	SC-SM, SM	A-2-4	0.2 - 2.0	5.1-8.4		
	66-80	SM, SP-SM	A-2-4	6.0 - 20.0	5.1-8.4		

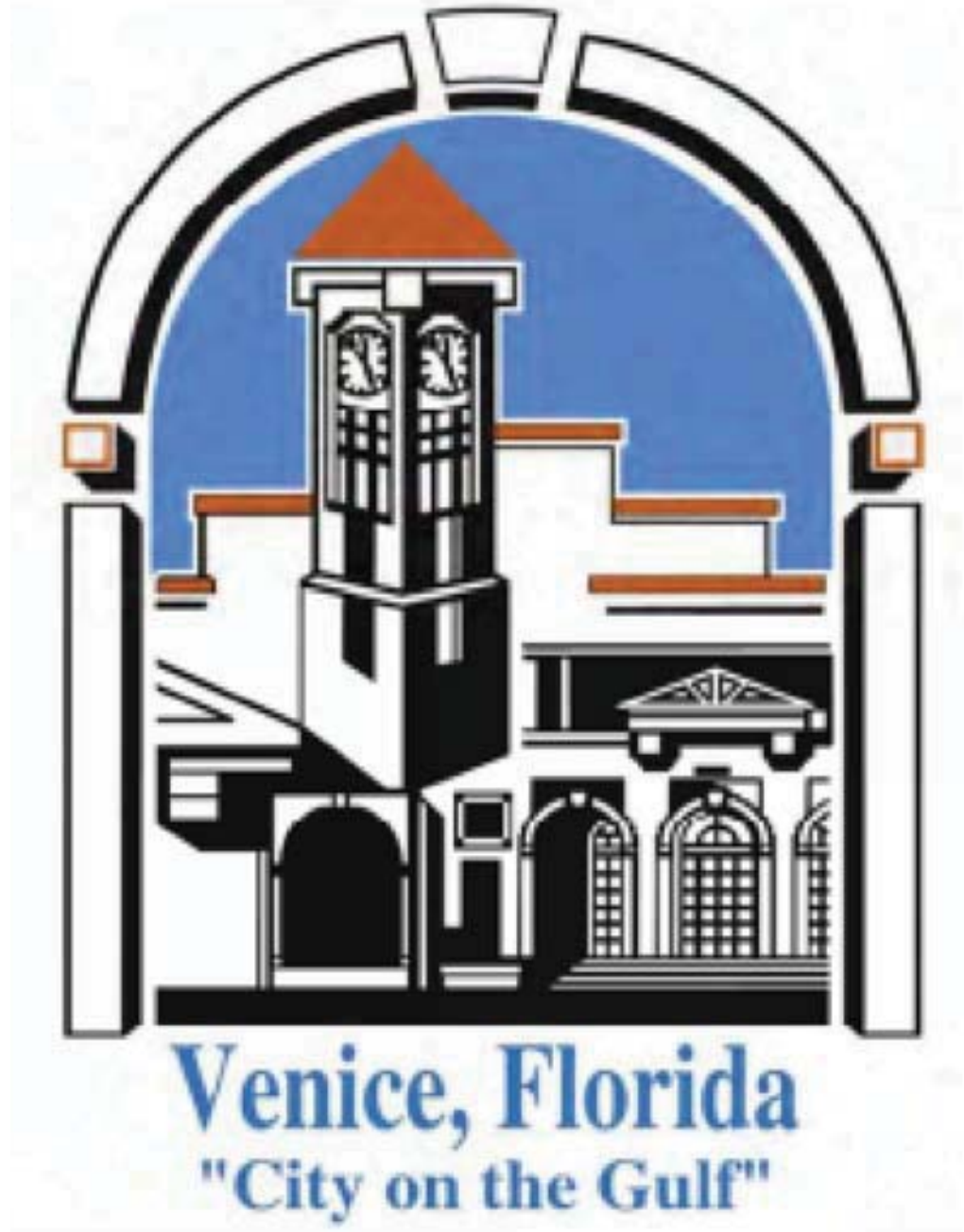
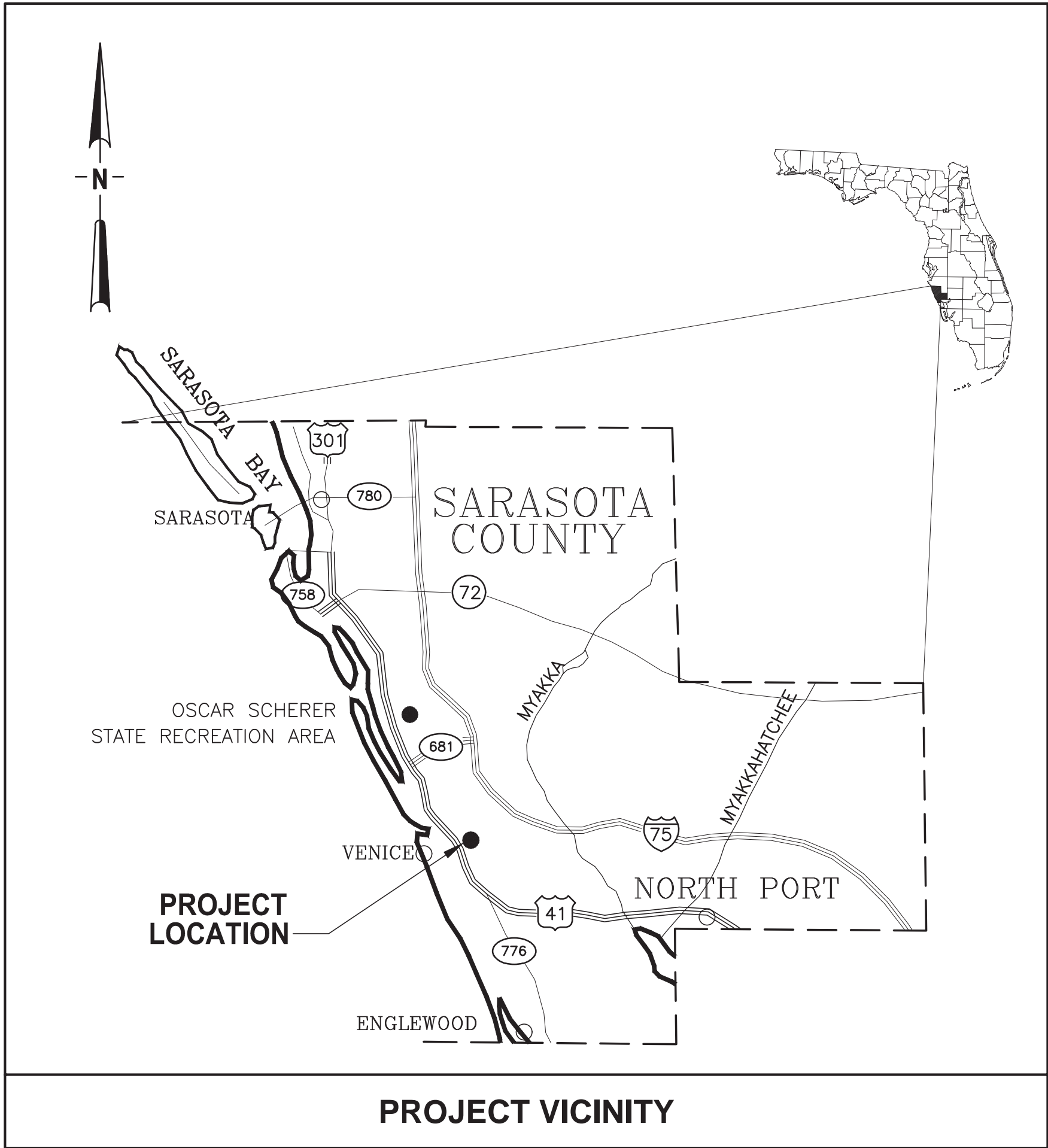
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EAST GATE TERRACE PHASE 1

WATER MAIN REPLACEMENT PROJECT

PREPARED FOR:
CITY OF VENICE, FLORIDA



PREPARED BY:

JonesEdmunds

CERTIFICATE OF AUTHORIZATION #1841
730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440



CITY OF VENICE CIP NO: 95944

JONES EDMUNDS PROJECT NO: 22120-001-01

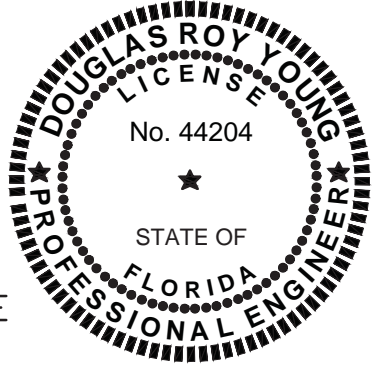
THIS ITEM HAS BEEN ELECTRONICALLY SIGNED BY DOUGLAS R. YOUNG, PE ON THE DATE INDICATED USING A DIGITAL SIGNATURE.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED, AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

Douglas R Young

Digitally signed by Douglas R Young
Date: 2018.01.29 17:22:18 -05'00'

JANUARY 2018



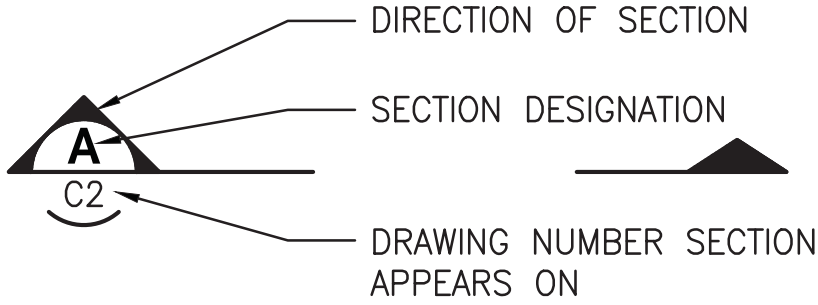
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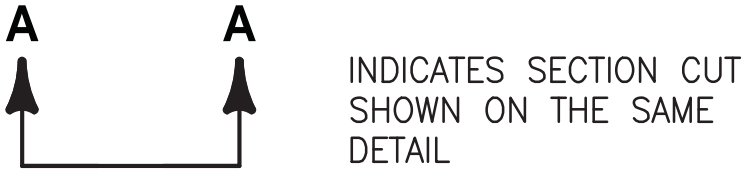
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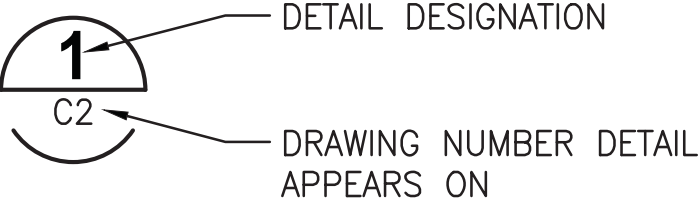
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DRAWING NUMBER	SHEET DESCRIPTION
GENERAL	
G1	COVER
G2	DRAWING INDEX AND DESIGNATIONS
G3	ABBREVIATIONS
G4	GENERAL NOTES, SURVEY LEGEND AND SURVEYOR NOTES
G5	CIVIL AND MECHANICAL LEGENDS AND PIPE SCHEDULE
G6	KEY MAP
G7	ABANDONMENT PLAN
CIVIL	
C1	CYPRESS AVE – PLAN
C2	CYPRESS AVE – PLAN
C3	CYPRESS AVE – PLAN
C4	CYPRESS AVE – PLAN
C5	CYPRESS AVE – PLAN
C6	CYPRESS AVE – PLAN
C7	LAUREL AVE – PLAN
C8	LAUREL AVE – PLAN
C9	LAUREL AVE – PLAN
C10	LAUREL AVE – PLAN
C11	LAUREL AVE – PLAN
C12	LAUREL AVE – PLAN
C13	DETAILS
C14	DETAILS



SECTION DESIGNATION



SECTION DESIGNATION



DETAIL DESIGNATION

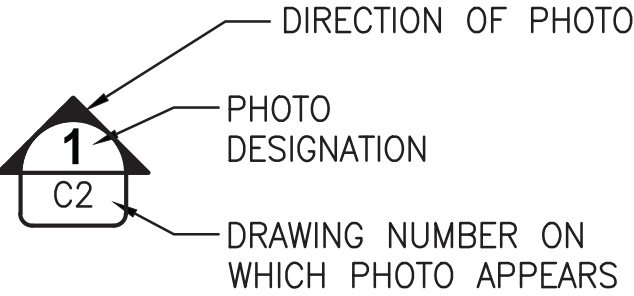


PHOTO DESIGNATION

BID SET

LTR.	DATE	REVISIONS	BY	APPRD.	

DESIGNED	DYOUNG
DRAWN	RWADE
CHECKED	JBANKS

JonesEdmunds

CERTIFICATE OF AUTHORIZATION #1841
730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440

EAST GATE TERRACE PHASE 1
WATER MAIN REPLACEMENT PROJECT
CITY OF VENICE, FLORIDA

DRAWING INDEX AND
DESIGNATIONS

APPROVED BY DOUGLAS R. YOUNG P.E. # 44204	DATE JAN. 2018	PROJECT NO. 22120-001-01
	SCALE NONE	DWG. NO. G2

STANDARD ABBREVIATIONS

BID SET

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PLOT DATE: 1/29/2018 01:35 PM JOHN KRAMER

GENERAL NOTES

REFERENCED DATA

1. SURVEY WAS PERFORMED BY HYATT SURVEY SERVICES, INC. THE SURVEY IS REFERENCED TO A PROJECTION OF THE STATE PLANE COORDINATE SYSTEM OF FLORIDA WEST ZONE (NAD 83/11). NGS VERTICAL CONTROL POINT "H 699" NAVD 1988 ELEVATION 13.81' WAS RECOVERED AND UTILIZED FOR THE INDICATED ELEVATIONS. FINAL RECORD DRAWINGS SHALL REFERENCE ALL ELEVATIONS TO NAVD 88. REFER TO SPECIFICATION SECTION 01785 RECORD DRAWINGS FOR ADDITIONAL INFORMATION.
2. INFORMATION CONTAINED HEREIN WAS OBTAINED FOR DESIGN PURPOSES AND MAY NOT BE AN ADEQUATE REPRESENTATION OF ACTUAL CONDITIONS FOR PROJECT CONSTRUCTION. EXISTING CONTOURS SHOWN REPRESENT INTERPOLATIONS/EXTRAPOLATIONS FROM THE BEST AVAILABLE SURVEY DATA. ALL RISKS RESULTING FROM THE USE OR INTERPRETATION OF THE SURVEY DATA SHOWN SHALL BE BORNE BY THE CONTRACTOR.
3. GEOTECHNICAL INVESTIGATION AND RECOMMENDATIONS PERFORMED BY TIERRA, INC. OF TAMPA, FL. REFER TO REPORT DATED NOVEMBER 13, 2017 INCLUDED AS APPENDIX A IN THE SPECIFICATIONS.

GENERAL

4. THE WORDS "FURNISH", "PROVIDE", "SUPPLY", AND SIMILAR WORDS MEAN THE CONTRACTOR SHALL FURNISH AND INSTALL THE ITEM BEING REFERRED TO.
5. THE CONTRACTOR SHALL COORDINATE WITH WATER DISTRIBUTION SYSTEM OPERATIONS STAFF TO ASSURE CONTINUOUS OPERATION OF THE FACILITY AND COMPLIANCE WITH ALL OPERATIONAL PERMIT REQUIREMENTS.
6. THE CONTRACTOR SHALL COMPLY WITH ALL CONDITIONS AND REQUIREMENTS OF ALL PERMITS (FDEP, ETC) OBTAINED FOR THIS PROJECT.
7. CONSTRUCTION MATERIALS QUALITY AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND STANDARDS.
8. THE CONTRACTOR IS ADVISED NOT TO SCALE FROM DRAWINGS BUT TO FIELD VERIFY ALL DIMENSIONS. THE DIMENSIONS OF SPECIFIED AND FURNISHED PRODUCTS AND MATERIALS TAKE PRECEDENCE OVER DIMENSIONS INDICATED ON THE DRAWINGS. IF SIGNIFICANT DEVIATIONS OCCUR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 72 HOURS PRIOR TO CONSTRUCTION FOR A DETERMINATION AND RESOLUTION.
9. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS REQUIRED TO PERFORM MISCELLANEOUS WORK NOT SHOWN BUT OBVIOUSLY NECESSARY FOR THE PROPER COMPLETION OF THE WORK.

EXISTING CONDITIONS

10. LOCATIONS, ELEVATIONS, AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES ARE SHOWN BASED ON THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE DRAWINGS BUT ARE NOT PURPORTED TO BE ABSOLUTELY CORRECT. THERE MAY BE OTHER IMPROVEMENTS, UTILITIES, ETC. WHICH ARE WITHIN THE PROJECT AREA. CONTRACTOR SHALL SURVEY PRIOR TO CONSTRUCTION, USING A SURVEYOR LICENSED IN THE STATE OF FLORIDA, THE LOCATIONS, ELEVATIONS, DIMENSIONS, TYPES, AND CONDITIONS OF EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES (WHETHER OR NOT SHOWN ON THE DRAWINGS) WITHIN THE AREA EXTENDING 100 FEET BEYOND THE AREA AFFECTED BY CONSTRUCTION.
11. PRIOR TO SHOP DRAWING PREPARATION AND SUBMITTAL AND PURCHASE OF RELATED MATERIALS, THE CONTRACTOR SHALL FIELD VERIFY EXISTING UTILITIES (LOCATION, SIZE, MATERIALS OF CONSTRUCTION, OUTSIDE DIAMETER, WALL THICKNESS, ROUNDNESS, ELEVATIONS, ETC.) TO WHICH CONNECTION(S) WILL BE MADE. CONTRACTOR SHALL INCLUDE FIELD MEASUREMENTS ON SHOP DRAWINGS.
12. THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER IN WRITING IMMEDIATELY IF CONFLICTS BETWEEN THE DRAWINGS AND ACTUAL CONDITIONS ARE DISCOVERED. THE CONTRACTOR SHALL ACCURATELY RECORD ANY SUCH CONFLICTS ON THE RECORD DRAWINGS.
13. ANY PROPERTY CORNERS, MONUMENTS, OR BENCH MARKS WITHIN THE PROJECT AREA SHALL BE PROTECTED UNLESS OTHERWISE INDICATED FOR DEMOLITION. IF ANY SUCH ITEMS ARE IN DANGER OF DAMAGE OR HAVE BEEN DAMAGED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER IMMEDIATELY AND REPLACE/RESTORE THESE ITEMS AT NO ADDITIONAL COST TO THE OWNER.

UTILITY COORDINATION

14. THE CONTRACTOR SHALL NOTIFY ALL UTILITIES NEAR THE PROJECT AREA AT LEAST 72 HOURS (BUSINESS DAYS) PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE NOTIFYING "SUNSHINE 811" AT LEAST 72 HOURS PRIOR TO ANY DIGGING WORK TO HAVE ALL EXISTING UTILITIES LOCATED. THE PHONE NUMBER IS 811 AND THE WEB SITE IS WWW.SUNSHINE811.COM.

15. THE CONTRACTOR SHALL PRESERVE AND MAINTAIN EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES WITHIN THE PROJECT AREA. ANY DAMAGE SHALL BE REPAIRED BY AND AT THE EXPENSE OF THE CONTRACTOR TO THE SATISFACTION OF THE OWNER.
16. THE CONTRACTOR IS RESPONSIBLE FOR BRACING, SHORING, OR PROVIDING OTHER MEANS NECESSARY TO PROTECT AND SUPPORT EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES (EXPOSED OR UNEXPOSED) THAT MAY BE IMPACTED BY HIS WORK.

SAFETY

17. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BECOME FAMILIAR WITH THE OSHA EXCAVATION SAFETY STANDARDS AND TO ABIDE BY THEM AS COVERED UNDER THE FLORIDA TRENCH SAFETY ACT.
18. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION SAFETY.

RESTORATION

19. ALL PAVING, STABILIZED EARTH, DRIVEWAYS, CURBS, SIDEWALKS, FENCES, SOD, LANDSCAPING, CULVERTS, ETC. DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO EQUAL OR BETTER CONDITION BY AND AT THE EXPENSE OF THE CONTRACTOR.
20. CONTRACTOR SHALL OBSERVE BEST MANAGEMENT PRACTICES FOR EROSION CONTROL DURING CONSTRUCTION.

ACCESS/MAINTENANCE OF FACILITIES

21. THE CONTRACTOR SHALL PROVIDE ACCESS TO ALL EXISTING UTILITIES/FACILITIES AND MAINTAIN UNINTERRUPTED SERVICES THROUGHOUT THE CONTRACT PERIOD.

PIPING NOTES

22. SIZE OF FITTINGS SHOWN ON PLANS SHALL CORRESPOND TO THE ADJACENT STRAIGHT RUN OF PIPE UNLESS NOTED OTHERWISE. TYPE OF JOINT AND FITTING MATERIAL SHALL BE AS SPECIFIED FOR THE ADJACENT STRAIGHT RUN OF PIPE UNLESS NOTED OTHERWISE.

COATINGS

23. CONCRETE SURFACES SHALL BE COATED WHERE INDICATED IN ACCORDANCE WITH SECTION 09900, PAINTING AND COATING. COLOR TO MATCH EXISTING.














































BACKFLOW PREVENTERS

24. EXISTING BACKFLOW PREVENTERS SHALL BE RELOCATED. TESTABLE BACKFLOW PREVENTERS SHALL BE TESTED FOLLOWING RELOCATIONS.

CONSTRUCTION LAYOUT / LIMITS OF CONSTRUCTION

25. NO DISTURBANCE SHALL BE ALLOWED OUTSIDE THE LIMITS OF CONSTRUCTION SHOWN ON THE DRAWINGS UNLESS APPROVED BY THE OWNER. WORK ON PRIVATE PROPERTY SHALL BE DONE BY A LICENSED PLUMBER UNDER THE DIRECTION OF THE CONTRACTOR.

ORGANIZATION	CONTACT AND TITLE	ADDRESS	TELEPHONE NUMBER
CITY OF VENICE	TONY WIERZBICKI UTILITIES PROJECT MANAGER	3510 E. LAUREL ROAD NOKOMIS, FL 34275	941-486-2788
FLORIDA POWER AND LIGHT	JOEL BRAY	2455 PORT WEST BLVD. RIVIERA BEACH, FL 33407	954-581-3088
FRONTIER COMMUNICATIONS	CARLOS BATES	3712 W. WALNUT STREET TAMPA, FL 33609	941-906-6709
FIBERNET DIRECT	DANNY HASKETT	9250 W. FLAGLER STREET MIAMI, FL 33174	305-552-2931
SARASOTA COUNTY TRAFFIC	MARK RICHMOND	PO BOX 8 SARASOTA, FL 34230	-
SARASOTA COUNTY UTILITIES	MIKE MEHAN	1001 SARASOTA CENTER BLVD SARASOTA, FL 34240	941-650-3803
TECO-PEOPLES GAS	DANNY SHANAHAN	8261 VICO COURT SARASOTA, FL 34240	941-342-4006

SURVEY LEGEND					
	CONTROL POINT		TELEPHONE BOX		YARD DRAIN
	PIPE FOUND		PALM TREE		ELECTRIC METER
	IRON ROD FOUND		OAK TREE		PINE TREE
	MONUMENT FOUND		MISC TREE		RECLAIMED WATER METER
	SANITARY MANHOLE		MITERED END SECTION		RECLAIMED WATER VALVE
	STORM MANHOLE		ELECTRIC TRANSFORMER		BOLLARD
	LIGHT POLE		TELEPHONE PEDESTAL		MONITORING WELL
	ELECTRIC BOX		UTILITY POLE		FENCELINE
	FIRE HYDRANT		CABLE BOX		OVERHEAD ELECTRIC
	WATER SERVICE CONNECTION		BACKFLOW PREVENTER		RIGHT-OF-WAY
	WATER VALVE		CLEAN OUT		SHRUBLINE
	WATER METER				OVERHEAD TELEPHONE
	MAILBOX				STORM DRAIN PIPING
	SIGN				INV
	TELEPHONE MANHOLE				ELEVATION
	MANHOLE				RCP
	GAS MARKER				VCP

SURVEYOR NOTES

1. THIS SURVEY IS REFERENCED TO A PROJECTION OF THE STATE PLANE COORDINATE SYSTEM OF FLORIDA WEST ZONE (NAD 83/11).
2. THE FOLLOWING NGS VERTICAL CONTROL POINT WAS RECOVERED AND UTILIZED FOR THE ELEVATIONS INDICATED HEREON: "H 699" NAVD 1988 ELEVATION 13.81'
3. THIS IS NOT A BOUNDARY SURVEY.
4. LOCATION OF THE RIGHT-OF-WAY LINES ARE THE RESULT OF FOUND BOUNDARY MONUMENTATION TOGETHER WITH AVAILABLE PUBLIC RECORD INFORMATION. TITLE WORK WAS NOT PROVIDED.
5. THIS SURVEY IS SUBJECT TO PERTINENT EASEMENTS, RIGHTS OF WAY AND RESTRICTIONS OF RECORD, IF ANY.
6. THE LOCATION OF UTILITIES, FOUNDATIONS OR STRUCTURES, IF ANY, BENEATH THE SURFACE HAVE NOT BEEN DETERMINED.
7. THIS SURVEY DRAWING WAS PREPARED FOR THE EXCLUSIVE USE OF THE PARTY OR PARTIES CERTIFIED TO BELOW FOR THE EXPRESS PURPOSE STATED HEREON AND/OR CONTAINED IN THE CONTRACT BETWEEN HYATT SURVEY SERVICES, INC. AND THE CLIENT FOR THIS PROJECT. COPYING, DISTRIBUTING AND/OR USING THIS DRAWING, IN WHOLE OR IN PART FOR ANY PURPOSE OTHER THAN ORIGINALLY INTENDED WITHOUT WRITTEN CONSENT FROM HYATT SURVEY SERVICES, INC. IS STRICTLY PROHIBITED AND RENDERS THE SURVEYOR'S CERTIFICATION, SIGNATURE AND SEAL NULL AND VOID. ANY QUESTIONS CONCERNING THE CONTENT OR PURPOSE OF THIS DRAWING SHOULD BE DIRECTED TO HYATT SURVEY SERVICES, INC.

SUBSURFACE UTILITY LOCATIONS

Utility Locations				
Point #	Ground Elev.	Utility Elev.	Cover	Utility
10237	9.28	7.40	1.88	Water
10238	9.69	4.59	5.10	Communications
10239	9.83	6.58	3.25	Communications
10240	10.11	7.77	2.34	Gas
10241	10.21	7.23	2.98	Communications
10242	8.28	5.33	2.95	Communications
10243	8.33	4.78	3.55	Water
10245	7.28	5.53	1.75	Communications
10248	8.16	4.89	3.27	Communications
10249	6.47	0.90	5.57	Communications
10250	7.49	4.66	2.83	Reclaimed Water
10251	7.47	4.24	3.23	Communications
10252	8.14	5.20	2.94	Water
10253	8.28	4.72	3.56	Communications
10254	10.32	7.18	3.14	Water
10255	10.67	7.87	2.80	Communications

LTR.	DATE	REVISIONS	BY	APPRD.	

DESIGNED	DYOUNG
DRAWN	RWADE
CHECKED	JBANKS

CERTIFICATE OF AUTHORIZATION #1841
730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440

EAST GATE TERRACE PHASE 1
WATER MAIN REPLACEMENT PROJECT
CITY OF VENICE, FLORIDA

GENERAL NOTES, SURVEY LEGEND AND
SURVEYOR NOTES

APPROVED BY DOUGLAS R. YOUNG P.E. # 44204	DATE JAN. 2018	PROJECT NO. 22120-001-01
	SCALE NONE	DWG. NO. G4

CIVIL LEGEND

	90	CONTOUR
	ROW	RIGHT-OF-WAY BOUNDARY
		PROPERTY BOUNDARY
		CENTERLINE
	SF	SILT FENCE
		DEMO HATCH
		ABANDON IN PLACE
	X	FENCE
	OHE	OVERHEAD ELECTRIC
	UGE	UNDERGROUND ELECTRIC
	STS	STORM SEWER
	UGTV	UNDERGROUND CABLE TELEVISION
	UGT	UNDERGROUND TELEPHONE
	GAS	GAS MAIN
	SAN	GRAVITY SANITARY SEWER
	FM	SANITARY FORCE MAIN
	SS	SANITARY SEWER MANHOLE
	SW	STORM WATER MANHOLE
	RCW	RECLAIMED WATER MAIN
	WM	EXISTING WATER MAIN
		NEW WATER MAIN
	+100.00	SPOT ELEVATION
		COORDINATE POINT
		BOLLARD
		ASPHALT PAVEMENT RESTORATION
		DRIVEWAY RESTORATION
		GRAVEL
		LIMEROCK
		COMPACTED SOIL
	C1	SHEET OUTLINE AND DRAWING NUMBER

PIPING SYMBOLS

DOUBLE LINE	SINGLE LINE	
		PIPE
		WELDED PIPE
		FLANGED JOINT
		MECHANICAL JOINT OR RESTRAINED PUSH-ON JOINT
		FLEXIBLE COUPLING ADAPTER
		EXPANSION JOINT
		HUB & SPIGOT JOINT
		BALL JOINT
		FLANGED COUPLING ADAPTER W/ THRUST TIES
		FLEXIBLE COUPLING WITH THRUST TIES
		BLIND FLANGE
		ELBOW UP
		ELBOW DOWN
		TEE UP
		TEE DOWN
		FEMALE QUICK DISCONNECT FITTING
		MALE QUICK DISCONNECT FITTING

MECHANICAL LEGEND

DOUBLE LINE	SINGLE LINE	
		LATERAL UP
		LATERAL DOWN
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		UNION
		CAP
		ANCHOR
		WYE
		TEE
		CROSS
		ELBOW, 90 DEGREE
		ELBOW, 45 DEGREE
		ELBOW, 22.5 DEGREE
		ABANDON IN PLACE
		DEMOLISH AND REMOVE

VALVE SYMBOLS

	GATE
	BUTTERFLY
	BALL
	CHECK
	DIAPHRAGM
	NEEDLE
	PRESSURE RELIEF
	AIR RELEASE AND/OR VACUUM RELIEF
	REGULATED SIDE
	HYDRAULIC CONTROL VALVE
	PLUG

MISC SYMBOLS

	EXISTING WATER METER
	EXISTING IRRIGATION METER
	NEW WATER METER
	NEW IRRIGATION METER
	STREET ADDRESSES WHERE WORK IS TO BE PERFORMED
	EXISTING METERS AND SERVICES TO REMAIN
	WATER SERVICE CONNECTION

PIPE SUPPORT SYMBOLS

	FLANGED PIPE SUPPORT
	U-SHAPED PIPE SUPPORT
	PIPE SUPPORT W/ AXIAL LOAD SUPPORT

LAST SAVED: 12/20/2017 1:28 PM JKRAMER DWG LOCATION: \\TPA-MAIN\DRAWING\22120 CITY OF VENICE\001-01 EAST GATE TERRACE PHASE 1\CONTRACT DRAWINGS\GENERAL\22120001-G05.DWG

BID SET

LTR.	DATE	REVISIONS	BY	APPRD.	

DESIGNED	DYOUNG
DRAWN	RWADE
CHECKED	JBANKS

JonesEdmunds

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730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440

EAST GATE TERRACE PHASE 1
WATER MAIN REPLACEMENT PROJECT
CITY OF VENICE, FLORIDA

CIVIL AND MECHANICAL LEGENDS AND
PIPE SCHEDULE

APPROVED BY	DATE	PROJECT NO.
DOUGLAS R. YOUNG	JAN. 2018	22120-001-01
P.E. # 44204	SCALE	DWG. NO.
	NONE	G5

LAST SAVED: 1/17/2018 3:59 PM JKRAMER DWG LOCATION: \\TPA-MAIN\DRAWING\22120 CITY OF VENICE\001-01 EAST GATE TERRACE PHASE 1\CONTRACT DRAWINGS\GENERAL\22120001-G06.DWG



- 728

STREET ADDRESSES WHERE
WORK IS TO BE PERFORMED
- 728

EXISTING METERS AND
SERVICES TO REMAIN
- C1

SHEET OUTLINE AND
DRAWING NUMBER

LTR.	DATE	REVISIONS	BY	APPRD.	

DESIGNED	DYOUNG
DRAWN	RWADE
CHECKED	JBANKS

JonesEdmunds

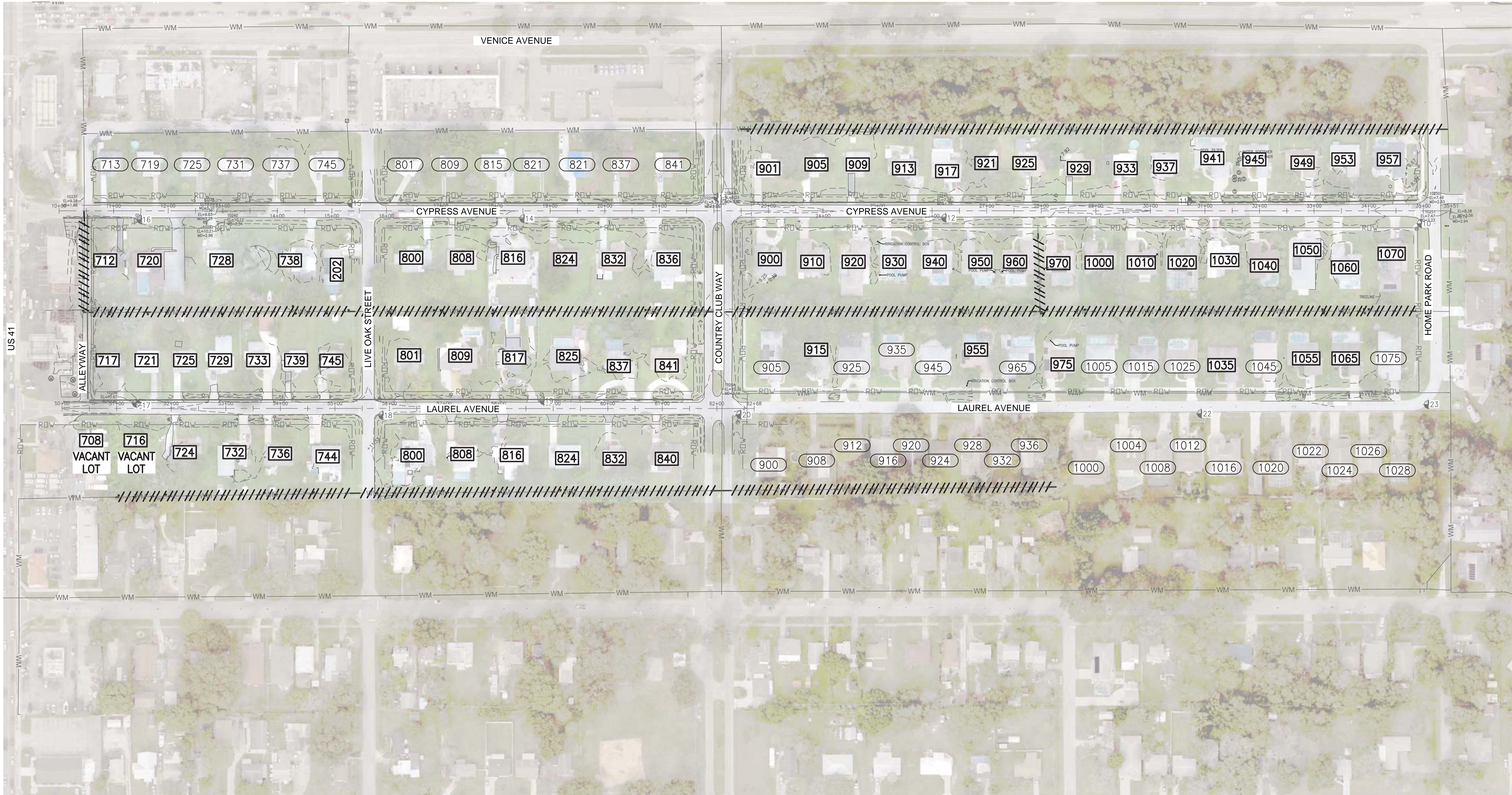
CERTIFICATE OF AUTHORIZATION #1841
730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440

EAST GATE TERRACE PHASE 1
WATER MAIN REPLACEMENT PROJECT
CITY OF VENICE, FLORIDA

KEY MAP

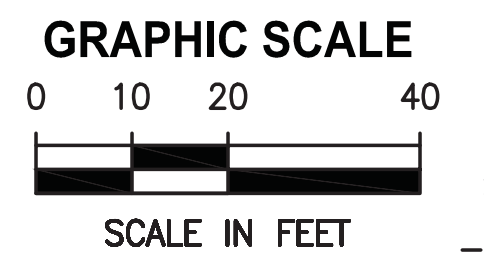
APPROVED BY DOUGLAS R. YOUNG P.E. # 44204	DATE JAN. 2018	PROJECT NO. 22120-001-01
	SCALE NONE	DWG. NO. G6

LAST SAVED: 12/20/2017 4:27 PM JKRAMER DWG LOCATION: \\TPA-MAIN\DRAWING\22120 CITY OF VENICE\001-01 EAST GATE TERRACE PHASE 1\CONTRACT DRAWINGS\DEMOLITION\22120001-G07.DWG



BID SET

						DESIGNED	DYOUNG	<div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div></div><div>CERTIFICATE OF AUTHORIZATION #1841 730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821 7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440</div></div></div>	<div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div></div><div>EAST GATE TERRACE PHASE 1 WATER MAIN REPLACEMENT PROJECT CITY OF VENICE, FLORIDA</div></div>	<div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div></div><div>ABANDONMENT PLAN</div></div>	APPROVED BY		DATE	PROJECT NO.
						DRAWN	RWADE				JAN. 2018	22120-001-01		
						CHECKED	JBANKS				DOUGLAS R. YOUNG	DWG. NO.		
LTR.	DATE	REVISIONS			BY	APPRD.	P.E. # 44204		NONE		G7			



1. WATER MAIN SHALL BE CONSTRUCTED WITH 36"-48" OF COVER. THE CONTRACTOR SHALL VERIFY LOCATIONS OF THE EXISTING UTILITIES AND NOTIFY THE ENGINEER IF COVER WITHIN THE STATED RANGE CANNOT BE MAINTAINED.
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12. CONTRACTOR SHALL COORDINATE WATER METER LOCATION AND NEW WATER SERVICE ROUTE ON PRIVATE PROPERTY WITH A CITY REPRESENTATIVE AND PROPERTY OWNER. CONTRACTOR SHALL CONSULT WATER METER RELOCATION AGREEMENT.

SEE DWG C7 FOR WATER METERS ON SOUTH SIDE OF 4" AC WM

					DESIGNED	<u>DYOUNG</u>
					DRAWN	<u>RWADE</u>
					CHECKED	<u>JBANKS</u>
LTR.	DATE	REVISIONS	BY	APPRD.		

JonesEdmunds

CERTIFICATE OF AUTHORIZATION #1841

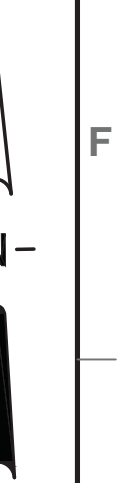
730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440

**EAST GATE TERRACE PHASE 1
WATER MAIN REPLACEMENT PROJECT
CITY OF VENICE, FLORIDA**

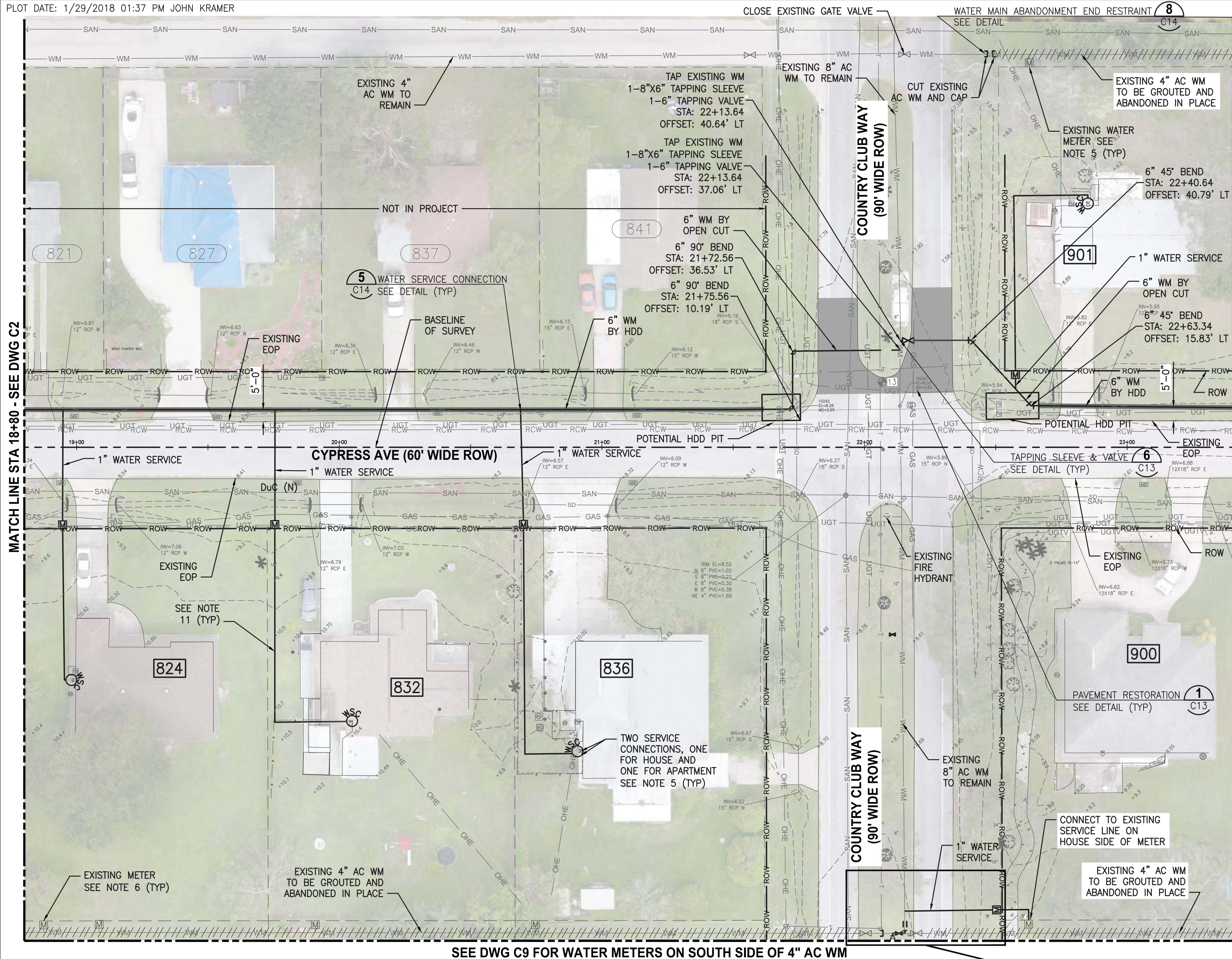
CYPRESS AVE - PLAN

APPROVED BY	DATE JAN. 2018	PROJECT NO. 22120-001-01
DOUGLAS R. YOUNG	SCALE AS NOTED	DWG. NO. C1
P.E. # 44204		

LAST SAVED: 1/18/2018 8:03 AM JKRAMER DWG LOCATION: \\TPA-MAIN\\DRAFTING\\22120 CITY OF VENICE\\001-01 EAST GATE TERRACE PHASE 1\\CONTRACT DRAWINGS\\CIVIL\\22120001-C01.DWG



APPROVED BY	DATE JAN. 2018	PROJECT NO. 22120-001-01
DOUGLAS R. YOUNG	SCALE AS NOTED	DWG. NO. C2
P.E. # 44204		



NOTES:

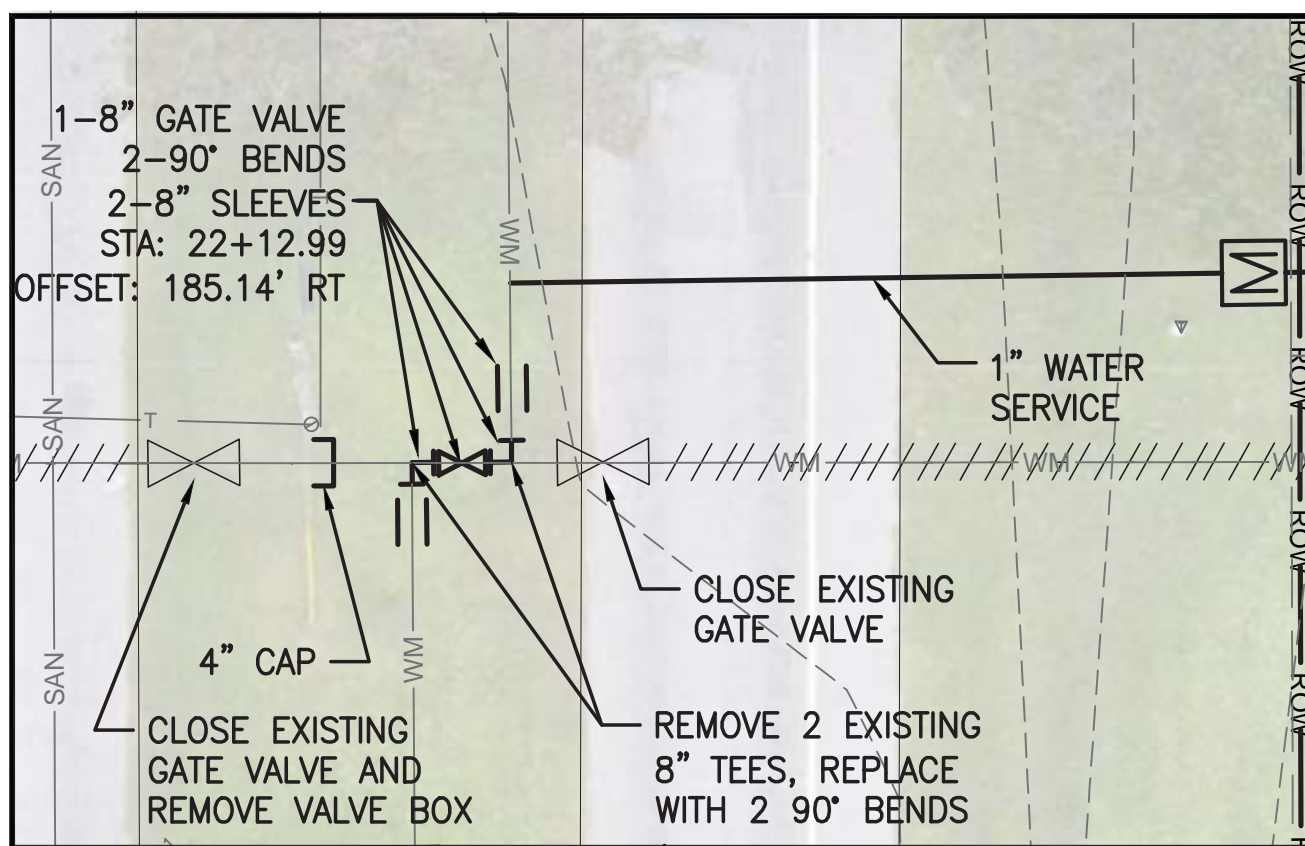
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GRAPHIC SCALE

0 10 20 40

SCALE IN FEET

BID SET



SEE DWG C9 FOR WATER METERS ON SOUTH SIDE OF 4\"/>

LAST SAVED: 1/18/2018 2:18 PM JKRAMER DWG LOCATION: \\TPA-MAIN\DRAWING\22120 CITY OF VENICE\001-01 EAST GATE TERRACE PHASE 1\CONTRACT DRAWINGS\CIVIL\22120001-C03.DWG

LTR.	DATE	REVISIONS	BY	APPRD.

DESIGNED D YOUNG
DRAWN R WADE
CHECKED J BANKS

JonesEdmunds
CERTIFICATE OF AUTHORIZATION #1841
730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440

EAST GATE TERRACE PHASE 1
WATER MAIN REPLACEMENT PROJECT
CITY OF VENICE, FLORIDA

CYPRESS AVE - PLAN

APPROVED BY

DOUGLAS R. YOUNG
P.E. # 44204

DATE

JAN. 2018

SCALE

AS NOTED

PROJECT NO.

22120-001-01

DWG. NO.

C3



1. WATER MAIN SHALL BE CONSTRUCTED WITH 36"-48" OF COVER. THE CONTRACTOR SHALL VERIFY LOCATIONS OF THE EXISTING UTILITIES AND NOTIFY THE ENGINEER IF COVER WITHIN THE STATED RANGE CANNOT BE MAINTAINED.
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MATCH LINE STA 27+60 - SEE DWG C5

EXISTING WATER

						DESIGNED	DYOUNG	 <p>JonesEdmunds</p> <p>CERTIFICATE OF AUTHORIZATION #1841 730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821 7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440</p>	<p align="center">EAST GATE TERRACE PHASE 1 WATER MAIN REPLACEMENT PROJECT CITY OF VENICE, FLORIDA</p>	<p align="center">CYPRESS AVE - PLAN</p>	APPROVED BY	DATE	PROJECT NO.
						DRAWN	RWADE						
						CHECKED	JBANKS						
LTR.	DATE	REVISIONS			BY	APPRD.					DOUGLAS R. YOUNG	SCALE	DWG. NO.
											P.E. # 44204	AS NOTED	C4

GRAPHIC SCALE

0 10 20 40

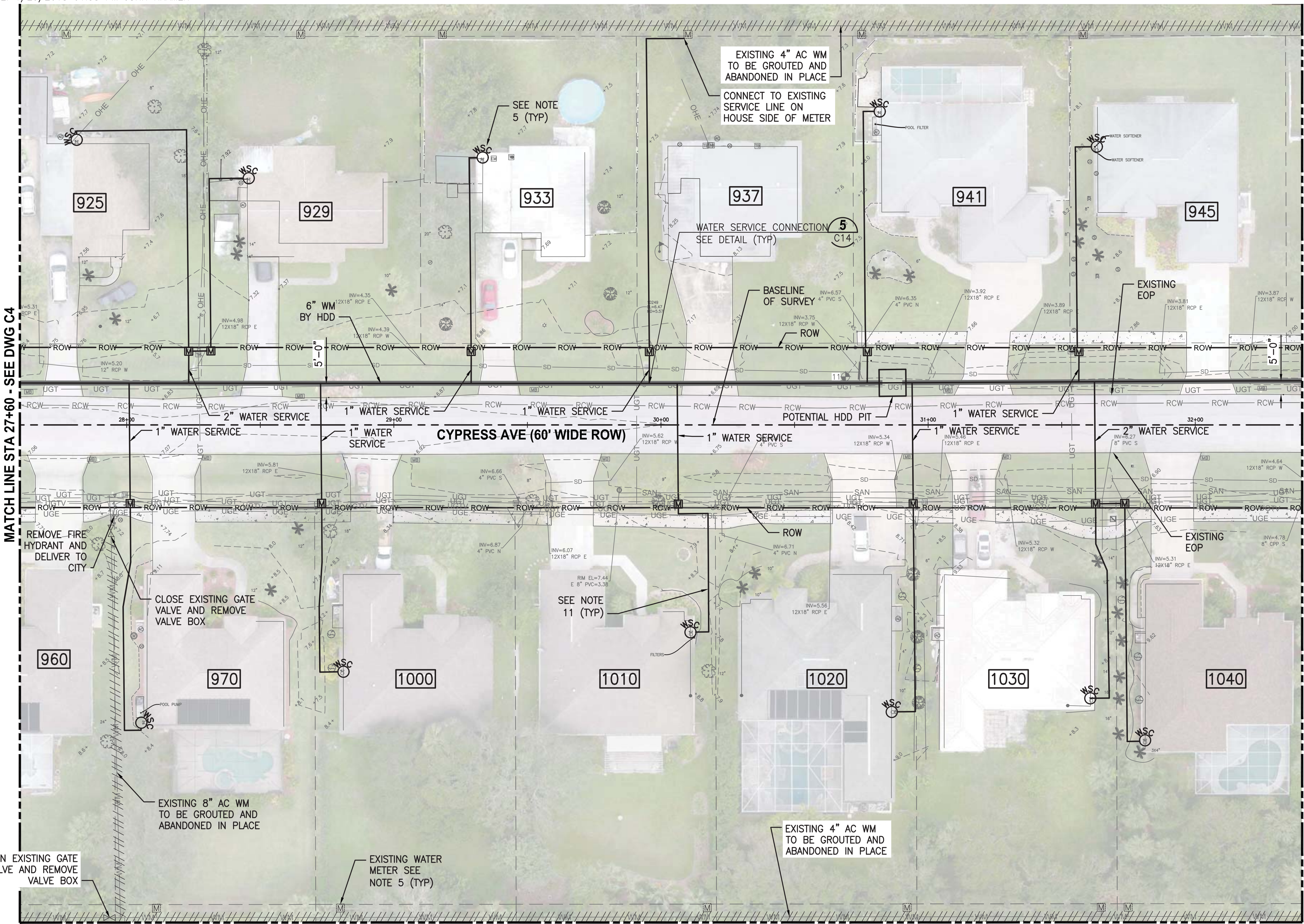
SCALE IN FEET



NOTES:

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BID SET



SEE DWG C11 FOR WATER METERS ON SOUTH SIDE OF 4" AC WM

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LTR.	DATE	REVISIONS	BY	APPRD.

DESIGNED	DYOUNG
DRAWN	RWADE
CHECKED	JBANKS

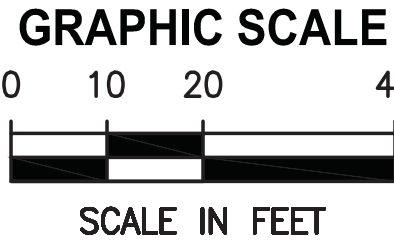
JonesEdmunds

CERTIFICATE OF AUTHORIZATION #1841
730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440

EAST GATE TERRACE PHASE 1
WATER MAIN REPLACEMENT PROJECT
CITY OF VENICE, FLORIDA

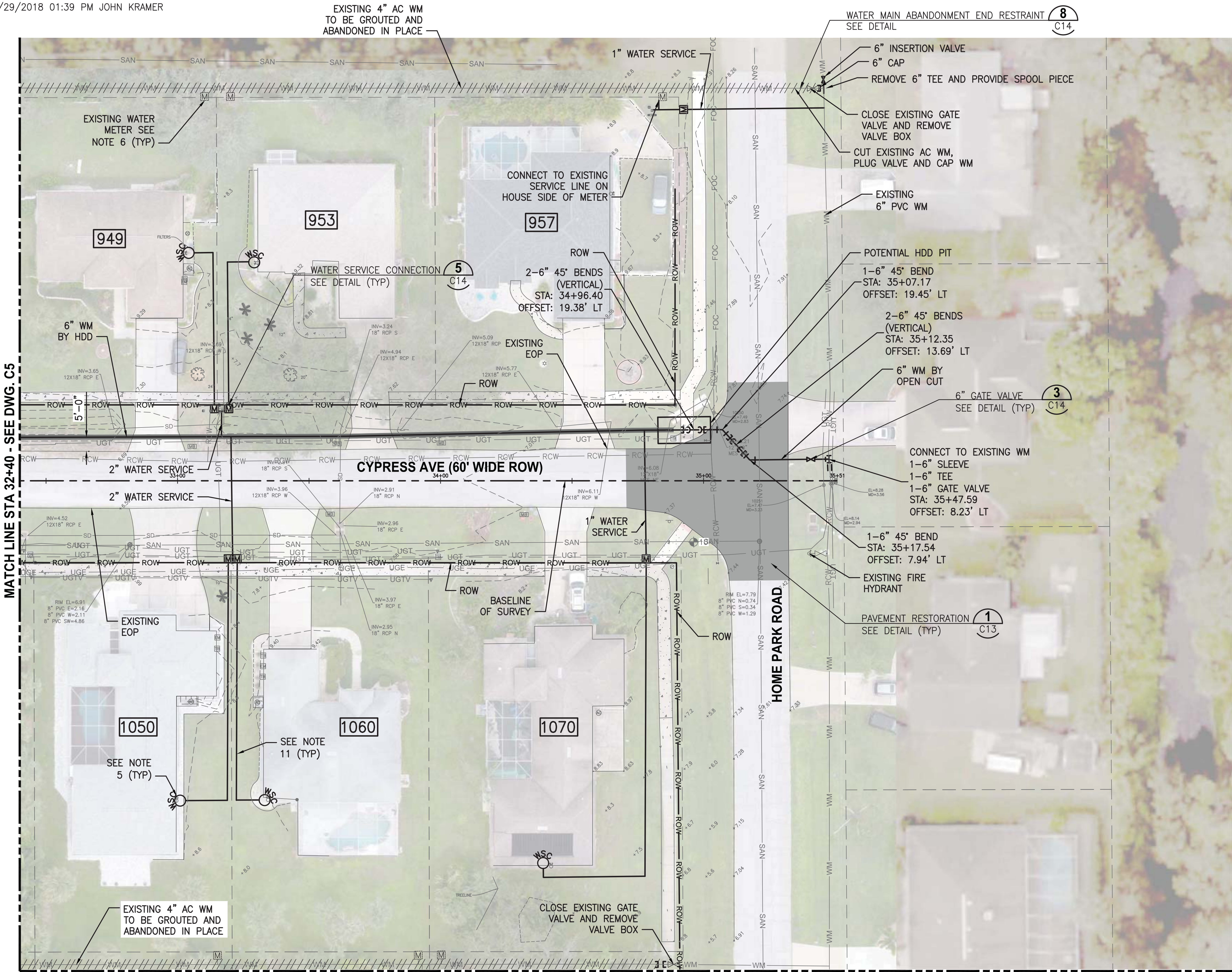
CYPRESS AVE - PLAN

APPROVED BY	DATE	PROJECT NO.
DOUGLAS R. YOUNG	JAN. 2018	22120-001-01
P.E. # 44204	SCALE	DWG. NO.
	AS NOTED	C5



NOTES:

1. WATER MAIN SHALL BE CONSTRUCTED WITH 36"-48" OF COVER. THE CONTRACTOR SHALL VERIFY LOCATIONS OF THE EXISTING UTILITIES AND NOTIFY THE ENGINEER IF COVER WITHIN THE STATED RANGE CANNOT BE MAINTAINED.
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SEE DWG C12 FOR WATER METERS ON SOUTH SIDE OF 4" AC WM

LTR.	DATE	REVISIONS	BY	APPRD.	

DESIGNED D YOUNG
DRAWN R WADE
CHECKED J BANKS

JonesEdmunds
CERTIFICATE OF AUTHORIZATION #1841
730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440

EAST GATE TERRACE PHASE 1
WATER MAIN REPLACEMENT PROJECT
CITY OF VENICE, FLORIDA

CYPRESS AVE - PLAN

APPROVED BY	DATE	PROJECT NO.
DOUGLAS R. YOUNG	JAN. 2018	22120-001-01
P.E. # 44204	SCALE	DWG. NO.
	AS NOTED	C6

SEE DWG C1 FOR WATER METERS ON NORTH SIDE OF 4" AC WM

GRAPHIC SCALE

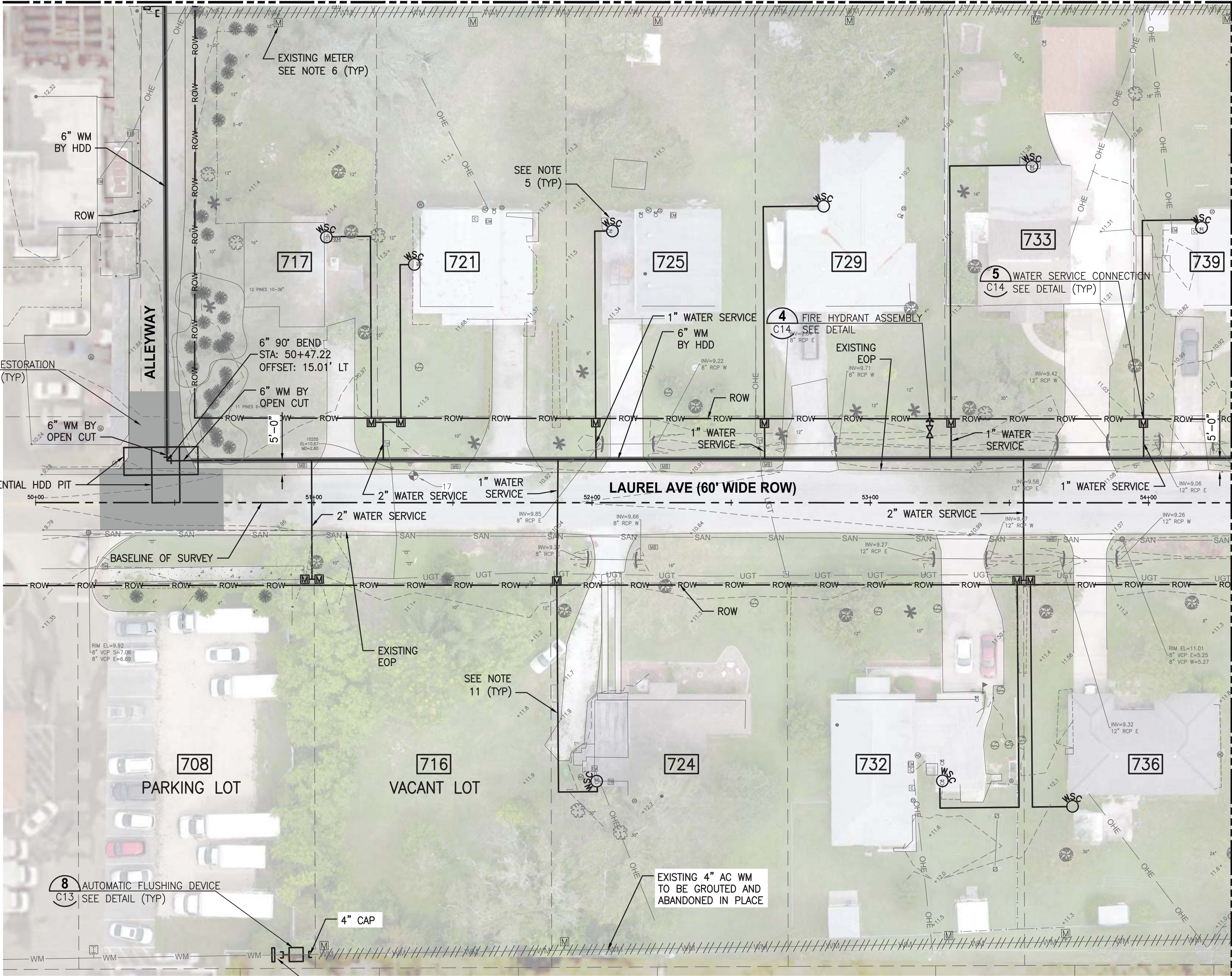
0 10 20 40

SCALE IN FEET

BID SET

NOTES:

1. WATER MAIN SHALL BE CONSTRUCTED WITH 36"-48" OF COVER. THE CONTRACTOR SHALL VERIFY LOCATIONS OF THE EXISTING UTILITIES AND NOTIFY THE ENGINEER IF COVER WITHIN THE STATED RANGE CANNOT BE MAINTAINED.
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3. CONTRACTOR SHALL PROTECT EXISTING HEADWALLS, TREES, LANDSCAPING, ETC.
4. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITION OR BETTER.
5. CONTRACTOR SHALL DISCONNECT EXISTING WATER SERVICE WHERE INDICATED AND CONNECT NEW WATER SERVICE. ABANDON EXISTING SERVICE IN PLACE.
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8. WORK DESCRIBED IN NOTES 5, 6 AND 7 SHALL NOT BE PERFORMED UNTIL NEW WATER MAINS AND SERVICES HAVE BEEN CLEARED FOR USE.
9. DRIVEWAYS DISTURBED BY CONSTRUCTION SHALL BE REPLACED IN KIND. CONCRETE DRIVEWAYS SHALL BE REPLACED TO THE NEXT CONSTRUCTION JOINT ABOVE DISTURBED AREA.
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12. CONTRACTOR SHALL COORDINATE WATER METER LOCATION AND NEW WATER SERVICE ROUTE ON PRIVATE PROPERTY WITH A CITY REPRESENTATIVE AND PROPERTY OWNER. CONTRACTOR SHALL CONSULT WATER METER RELOCATION AGREEMENT.



LTR.	DATE	REVISIONS	BY	APPRD.	

DESIGNED	DYOUNG
DRAWN	RWADE
CHECKED	JBANKS

JonesEdmunds

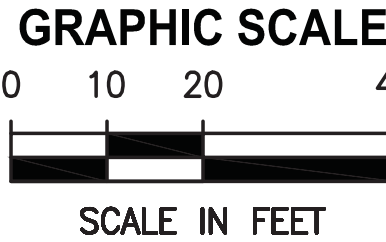
CERTIFICATE OF AUTHORIZATION #1841
730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440

EAST GATE TERRACE PHASE 1
WATER MAIN REPLACEMENT PROJECT
CITY OF VENICE, FLORIDA

LAUREL AVE - PLAN

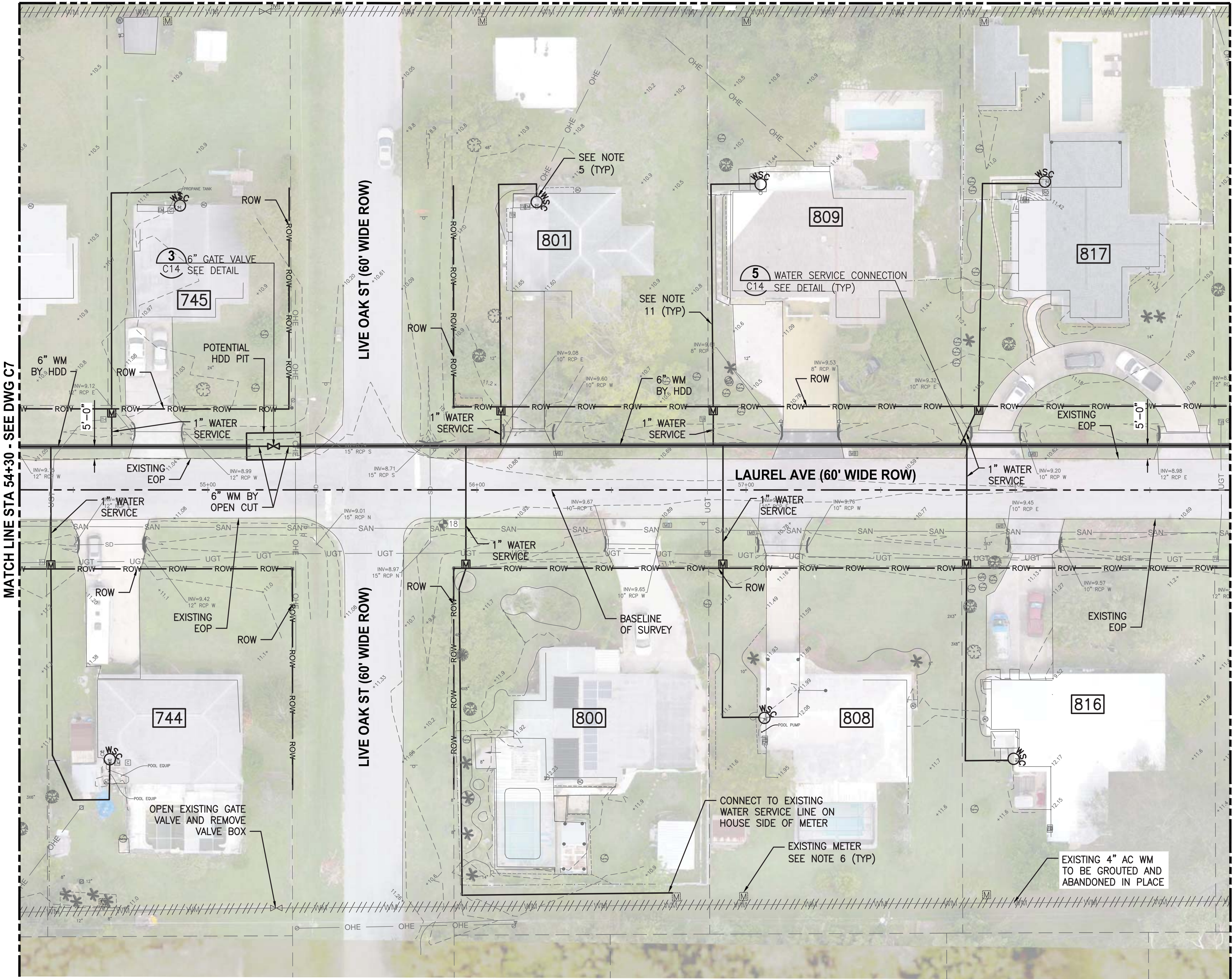
APPROVED BY	DATE	PROJECT NO.
DOUGLAS R. YOUNG	JAN. 2018	22120-001-01
P.E. # 44204	SCALE	DWG. NO.
	AS NOTED	C7

SEE DWG C2 FOR WATER METERS ON NORTH SIDE OF 4" AC WM



NOTES:

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LTR.	DATE	REVISIONS	BY	APPRD.	

DESIGNED	DYOUNG
DRAWN	RWADE
CHECKED	JBANKS

JonesEdmunds

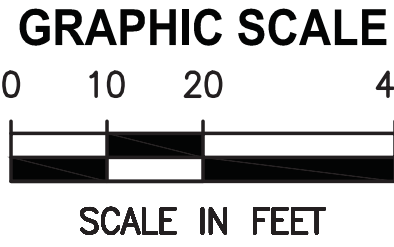
CERTIFICATE OF AUTHORIZATION #1841
730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440

EAST GATE TERRACE PHASE 1
WATER MAIN REPLACEMENT PROJECT
CITY OF VENICE, FLORIDA

LAUREL AVE - PLAN

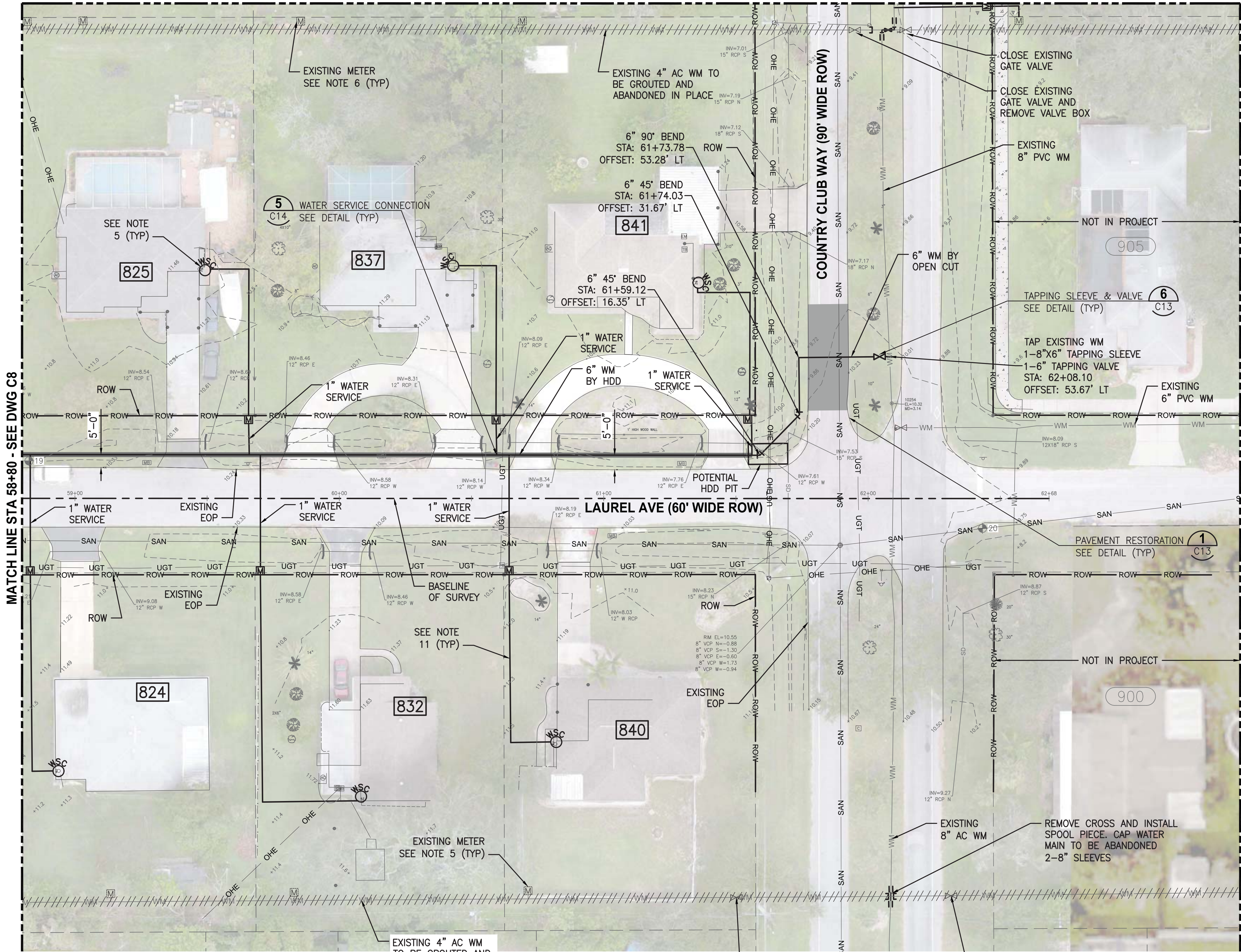
APPROVED BY	DATE	PROJECT NO.
DOUGLAS R. YOUNG	JAN. 2018	22120-001-01
P.E. # 44204	SCALE	DWG. NO.
	AS NOTED	C8

SEE DWG C3 FOR WATER METERS ON NORTH SIDE OF 4" AC WM



NOTES:

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LTR.	DATE	REVISIONS	BY	APPRD.

DESIGNED	DYOUNG
DRAWN	RWADE
CHECKED	JBANKS

JonesEdmunds

CERTIFICATE OF AUTHORIZATION #1841
730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440

EAST GATE TERRACE PHASE 1
WATER MAIN REPLACEMENT PROJECT
CITY OF VENICE, FLORIDA

LAUREL AVE - PLAN

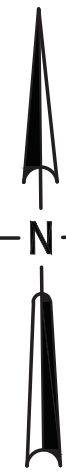
APPROVED BY	DATE	PROJECT NO.
DOUGLAS R. YOUNG	JAN. 2018	22120-001-01
P.E. # 44204	SCALE	DWG. NO.
	AS NOTED	C9

SEE DWG C4 FOR WATER METERS ON NORTH SIDE OF 4" AC WM

GRAPHIC SCALE

0 10 20 40

SCALE IN FEET



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LTR.	DATE	REVISIONS	BY	APPRD.	

DESIGNED DYOUNG
DRAWN RWADE
CHECKED JBANKS

JonesEdmunds
CERTIFICATE OF AUTHORIZATION #1841
730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440


EAST GATE TERRACE PHASE 1
WATER MAIN REPLACEMENT PROJECT
CITY OF VENICE, FLORIDA

LAUREL AVE - PLAN

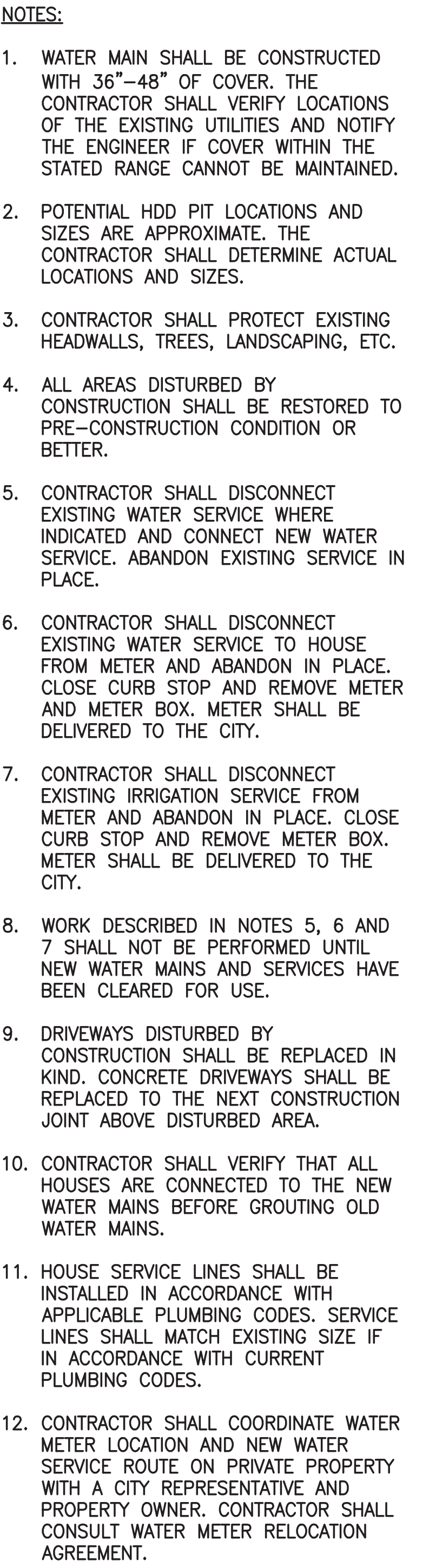
APPROVED BY	DATE	PROJECT NO.
DOUGLAS R. YOUNG	JAN. 2018	22120-001-01
P.E. # 44204	SCALE	DWG. NO.
	AS NOTED	C10

GRAPHIC SCALE

0 10 20 40



SCALE IN FEET



					DESIGNED	<u>DYOUNG</u>
					DRAWN	<u>RWADE</u>
LTR.	DATE	REVISIONS	BY	APPRD.	CHECKED	<u>JBANKS</u>

JonesEdmunds
 CERTIFICATE OF AUTHORIZATION #1841
 730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
 7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440

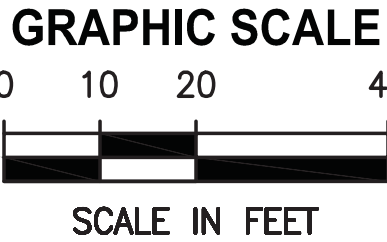
**EAST GATE TERRACE PHASE 1
WATER MAIN REPLACEMENT PROJECT
CITY OF VENICE, FLORIDA**

LAUREL AVE - PLAN

APPROVED BY	DATE JAN. 2018	PROJECT NO. 22120-001-01
DOUGLAS R. YOUNG	SCALE AS NOTED	DWG. NO. C11
P.E. # 44204		

BID SET

LAST SAVED: 1/19/2018 9:51 AM JKRAMER DWG LOCATION: \\TPA-MAIN\DRAWING\22120 CITY OF VENICE\001-01 EAST GATE TERRACE PHASE 1\CONTRACT DRAWINGS\CIVIL\22120001-C12.DWG



- NOTES:**
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						DESIGNED	DYOUNG
						DRAWN	RWADE
						CHECKED	JBANKS
LTR.	DATE	REVISIONS			BY	APPRD.	

JonesEdmunds
CERTIFICATE OF AUTHORIZATION #1841
730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440

**EAST GATE TERRACE PHASE 1
WATER MAIN REPLACEMENT PROJECT
CITY OF VENICE, FLORIDA**

LAUREL AVE - PLAN

APPROVED BY DOUGLAS R. YOUNG P.E. # 44204	DATE JAN. 2018	PROJECT NO. 22120-001-01
	SCALE AS NOTED	DWG. NO. C12

1/

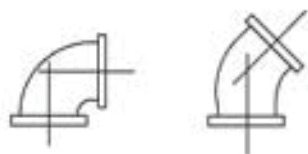


DESIGNED	DYOUNG
DRAWN	RWADE
CHECKED	JBANKS

--	--

	DATE JAN. 2018	PROJECT NO. 22120-001-01
	SCALE NONE	DWG. NO. C13

BID SET



- 1.) ALL PIPE FITTINGS SHALL BE COMPACT, DUCTILE IRON.
- 2.) ALL APPLICATIONS (RAW, PCTABLE, REUSE, SEWER) SHALL BE FUSION BONDED EPOXY COATED INSIDE AND OUT.
- 3.) ALL FITTINGS SHALL MEET AWWA C151/ASTM 15 STANDARDS.

PIPE FITTINGS
N.T.S.

SERVICE	COLOR	MATERIAL/CLASS
POTABLE WATER MAIN	BLUE	AWWA C900 PVC / DR 18 FUSIBLE C900 PVC / DR 18 HDPE PPI PE 3408 / DR 11 (DUCTILE IRON PIPE SIZE)
RAW WATER MAIN	WHITE	
REUSE MAIN	PURPLE	
FORCE MAIN (MIN. 4" DIAMETER)	GREEN	PE (POLYTUBING) / DR 9
WATER SERVICE	BLUE	PE (POLYTUBING) / DR 9
REUSE SERVICE	PURPLE	PE (POLYTUBING) / DR 9
GRAVITY SEWER MAIN (MIN. 8" DIAMETER)	GREEN	ASTM D3034 / SDR 26 FUSIBLE PVC / SDR 26
SEWER LATERAL (MIN. 6" DIAMETER)	GREEN	ASTM D3034 / SDR 26 / SCH 40 PVC

PIPE MATERIAL SCHEDULE
N.T.S.

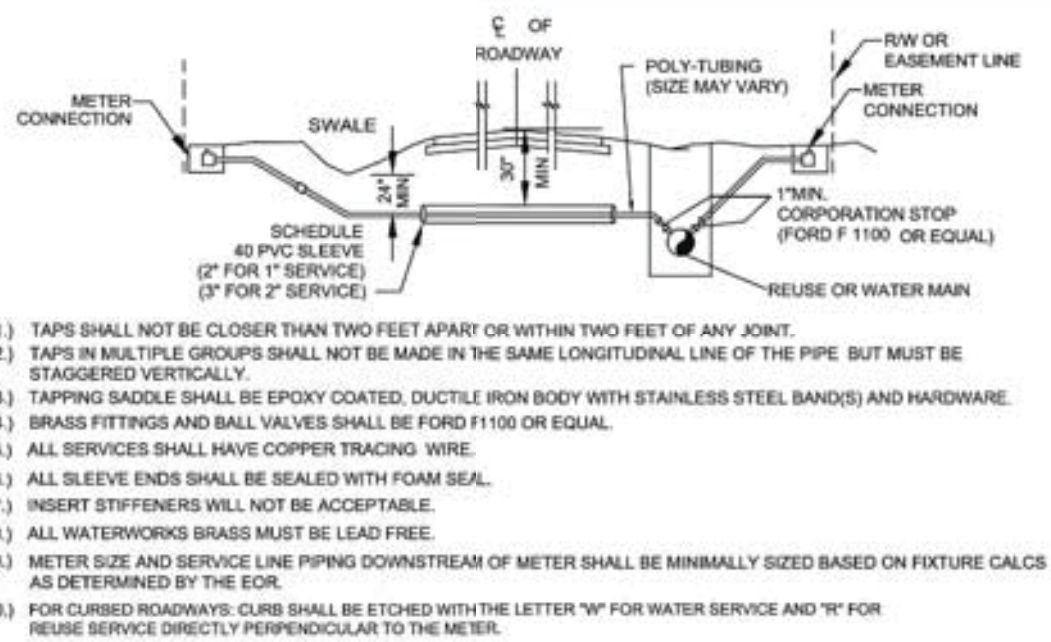
	CITY OF VENICE ENGINEERING DEPARTMENT 401 WEST VENICE AVE. VENICE FL 34285 (941) 486-2626 FAX (941) 480-3031	UTILITIES - GENERAL	DATE JAN. 2018
		PIPE FITTINGS & MATERIAL	SHEET NO. U-6

PIPE FITTINGS & MATERIAL

NTS

1

RESIDENTIAL METER CONNECTION DETAIL
N.T.S.



WATER & REUSE SERVICE CONNECTION
N.T.S.

	CITY OF VENICE ENGINEERING DEPARTMENT 401 WEST VENICE AVE. VENICE FL 34285 (941) 486-2626 FAX (941) 480-3031	UTILITIES - WATER	DATE JAN. 2018
		RESIDENTIAL METER & SERVICE CONNECTION	SHEET NO. W-8

WATER & REUSE SERVICE CONNECTION

NTS

5

FITTING		PIPE SIZE (INCHES)											
		4	6	8	10	12	16	18	20	24			
45 BEND:	H	6	9	12	14	16	21	23	25	29			
	VU	4	6	7	9	10	13	15	16	19			
	VD	12	20	26	32	37	48	53	28	68			
22.5 BEND:	H	3	4	6	7	8	10	11	12	14			
	VU	2	3	4	4	5	6	7	8	9			
	VD	7	10	13	15	16	23	26	28	33			
11.25 BEND:	H	2	2	3	3	4	5	6	7	7			

FITTING		PIPE SIZE (INCHES)											
		4	6	8	10	12	16	18	20	24			
90 BEND:	H	23	33	43	51	60	76	83	90	104			
	VU	10	14	18	21	25	31	34	37	43			
	VD	6	8	11	13	16	20	22	24	28			
45 BEND:	H	10	14	18	21	25	31	34	37	43			
	VU	6	8	11	13	16	20	22	24	28			
	VD	22	30	40	48	56	72	80	87	102			
22.5 BEND:	H	5	7	8	10	12	15	17	18	21			
	VU	3	4	5	6	7	10	11	12	14			
	VD	10	15	19	23	27	35	38	42	49			
11.25 BEND:	H	2	3	4	5	6	7	8	9	10			
PLUGS:		52	73	96	115	136	174	193	211	246			

- 1.) FOR TEE OR REDUCER FITTINGS SUBMIT RESTRAINTS, JOINT LENGTH CALCULATIONS TO CITY ENGINEER FOR REVIEW AND APPROVAL, USING THE ASSUMPTIONS LISTED ABOVE.
- 2.) RESTRAINED JOINT LENGTH FOR WATER AND REUSE MAINS BASED ON TEST PRESSURE OF 100 PSI. RESTRAINED JOINT LENGTH FOR FORCE (SEWER) MAINS BASED ON TEST PRESSURE OF 100 PSI. CALCULATIONS WERE MADE USING EBWA IRON SOFTWARE (AVAILABLE AT WWW.EBWA.COM) AND THE FOLLOWING ASSUMPTIONS: GRANULAR MATERIAL (GM) SOIL TYPE, TRENCH TYPE 3, BURY DEPTH OF 3 FT, AND SAFETY FACTOR OF 2 TO 1. IF FIELD CONDITIONS DIFFER FROM ABOVE ASSUMPTIONS EOR SHALL PROVIDE CALCULATIONS BASED ON ACTUAL CONDITIONS.
- 3.) RESTRAINED JOINT SHALL BE USED ON ALL JOINTS FROM ANY MAIN TEE TO ANY FIRE HYDRANT ASSEMBLY.
- 4.) THRUST BLOCKS WILL NOT BE ACCEPTED, UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.

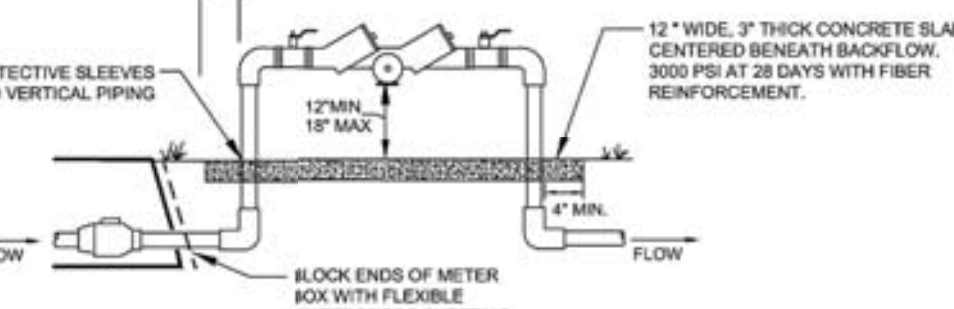
PRESSURE MAIN RESTRAINED JOINT TABLE
N.T.S.

	CITY OF VENICE ENGINEERING DEPARTMENT 401 WEST VENICE AVE. VENICE FL 34285 (941) 486-2626 FAX (941) 480-3031	UTILITIES - GENERAL	DATE JAN. 2018
		RESTRAINED JOINT TABLE	SHEET NO. U-7

PRESSURE MAIN RESTRAINED JOINT TABLE

NTS

2



- 1.) BACKFLOW PREVENTION ASSEMBLY TYPE SHALL BE DETERMINED BY THE CITY OF VENICE UTILITIES DEPARTMENT'S MOST CURRENT CROSS-CONNECTION CONTROL PROGRAM.
- 2.) ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE APPROVED BY THE UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH AND/OR ASSE 1013.
- 3.) ALL ABOVE GROUND PIPING SHALL BE RIGID COPPER.
- 4.) THE WATER METER AND BACKFLOWPREVENTER SHALL BE THE SAME SIZE.
- 5.) INSTALLED IMMEDIATELY AFTER THE UTILITY WATER METER UNLESS OTHERWISE APPROVED BY THE CITY OF VENICE UTILITIES DEPARTMENT.
- 6.) NO BRANCH OR TEE CONNECTIONS SHALL EXIST BETWEEN THE WATER METER AND BACKFLOW PREVENTER.
- 7.) ALL METER BOXES SHALL BE SET FLUSH WITH FINISHED GRADE.
- 8.) SHEETING SHALL BE A PVC TYPE MATERIAL WITH A MINIMUM OF 40 MIL THICKNESS.
- 9.) PROTECTIVE SLEEVES MAY BE PVC PIPE ONE SIZE LARGER THAN RISER OR OTHER CITY APPROVED MATERIAL.

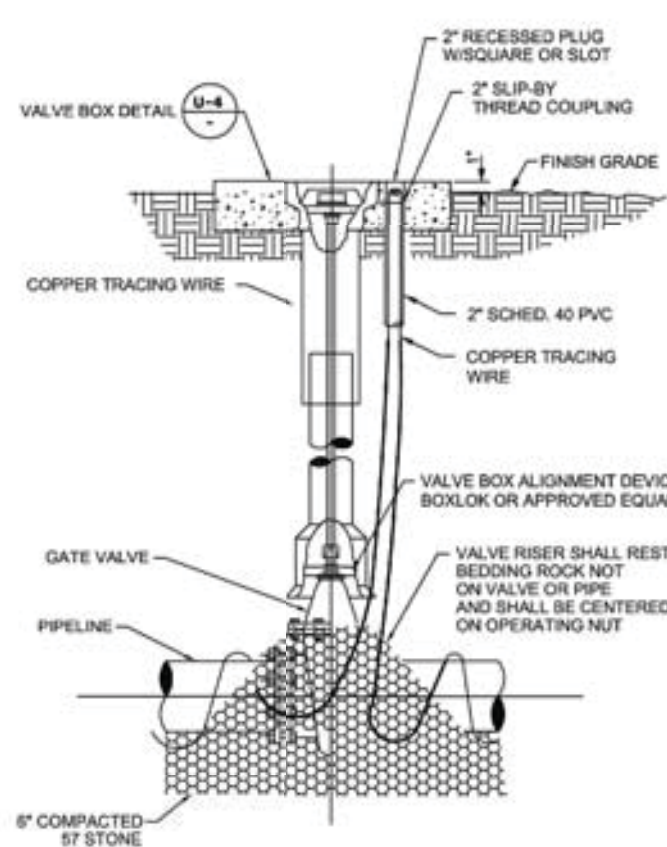
BACKFLOW PREVENTION ASSEMBLY (RESIDENTIAL, NOT MASTER METERED)
N.T.S.

	CITY OF VENICE ENGINEERING DEPARTMENT 401 WEST VENICE AVE. VENICE FL 34285 (941) 486-2626 FAX (941) 480-3031	UTILITIES - WATER	DATE JAN. 2018
		BACKFLOW ASSEMBLY (NO MASTER METER)	SHEET NO. W-5

BACKFLOW PREVENTION ASSEMBLY DETAIL

NTS

6



- 1.) GATE VALVES SHALL BE RESILIENT WEDGE-TYPE MANUFACTURED BY MUELLER, AMERICAN VALVE, OR EQUAL. ALL GATE VALVES SHALL BE FUSION BONDED EPOXY COATED (INTERIOR AND EXTERIOR) MEET AWWA C550, AND BE NSF1 CERTIFIED.
- 2.) FOR VALVES LARGER THAN 12" IN USE BUTTERFLY STYLE VALVE.
- 3.) VALVE SHALL BE INSTALLED IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- 4.) COPPERHEAD TRACING WIRE #12 AWG OR EQUAL SHALL BE USED. IT SHALL BE COLOR CODED TO REFLECT WHAT THE PIPE CARRIES. (BLUE = WATER, PURPLE = REUSE).
- 5.) FOR CURBED ROADWAYS: CURB SHALL BE ETCHED WITH THE LETTER "V" DIRECTLY PERPENDICULAR TO THE VALVE BOX.

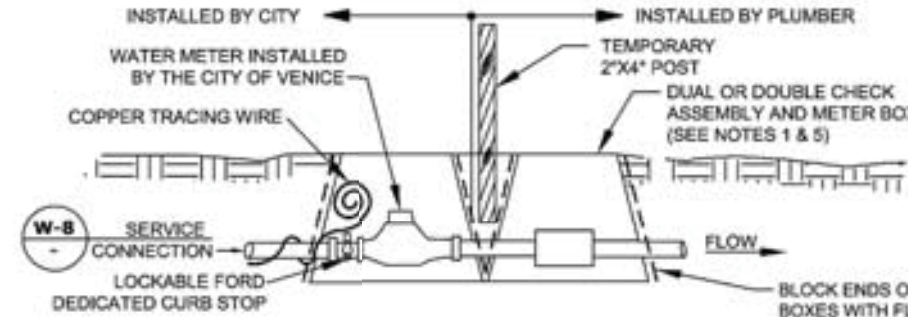
GATE VALVE DETAIL (WATER AND REUSE ONLY)
N.T.S.

	CITY OF VENICE ENGINEERING DEPARTMENT 401 WEST VENICE AVE. VENICE FL 34285 (941) 486-2626 FAX (941) 480-3031	UTILITIES - WATER	DATE JAN. 2018
		GATE VALVE	SHEET NO. W-1

GATE VALVE DETAIL

NTS

3



- 1.) THE POTABLE WATER SYSTEM SHALL USE A BROOKS MODEL# 1220 BLACK PLASTIC METER BOX WITH METAL READER AND BLACK SOLID RODS OR APPROVED EQUAL FOR BOTH METER AND CHECK VALVE.
- 2.) CENTER METER IN BOX AND BLOCK ENDS OF BOX TO PREVENT DIRT FROM ENTERING WITH FLEXIBLE WATERPROOF SHEETING. SHEETING SHALL BE A PVC TYPE MATERIAL WITH MINIMUM 40 MIL THICKNESS.
- 3.) COPPERHEAD TRACING WIRE #12 AWG OR EQUAL SHALL BE USED AND COLOR CODED TO REFLECT WHAT THE PIPE CARRIES (BLUE = WATER).
- 4.) LOCKING CURB STOP MUST BE LOCATED IN BOX AND SHALL BE LOCKED IN THE CLOSED POSITION WITH A LOCK SUPPLIED BY THE UTILITIES DEPARTMENT AT THE TIME OF SERVICE LINE INSTALLATION. LOCK TO BE REMOVED BY THE UTILITIES DEPARTMENT ONLY AFTER STANDARD DETAIL REQUIREMENTS ARE MET. DEDICATED FIRE SERVICE CURB STOP SHALL BE LOCKED IN THE OPEN POSITION BY THE UTILITIES DEPARTMENT AFTER STANDARD DETAIL REQUIREMENTS ARE MET. ALL CURB STOPS SHALL BE ORIENTED WITH THE OPERATING NUT ON TOP AND ACCESSIBLE FOR SERVICE BY A CURB STOP KEY.
- 5.) DUAL OR DOUBLE CHECK ASSEMBLY, WHEN REQUIRED BY THE CITY OF VENICE UTILITIES DEPARTMENT'S MOST CURRENT CROSS-CONNECTION CONTROL PROGRAM, SHALL BE INSTALLED BY A PLUMBER IN A SEPARATE BOX IMMEDIATELY AFTER THE WATER METER BOX. TEST PORTS SHALL BE PLUGGED WITH NON-METALLIC OR PLASTIC PLUGS.
- 6.) RESIDENTIAL FIRE SERVICE SPINALLERS INCORPORATED INTO DOMESTIC RESIDENTIAL PLUMBING SHALL BE SERVICED BY AN ELECTRONIC WATER METER MEETING NPPA STANDARDS FOR FLOW AND PRESSURE LOSS.
- 7.) THE ENGINEER OF RECORD SHALL SUBMIT METER SIZING CALCULATIONS BASED ON SERVICE DEMAND PER AWWA M-22 AND SUBJECT TO APPROVAL BY THE UTILITIES DEPARTMENT.
- 8.) ALL METER BOXES SHALL BE SET FLUSH WITH FINISHED GRADE.

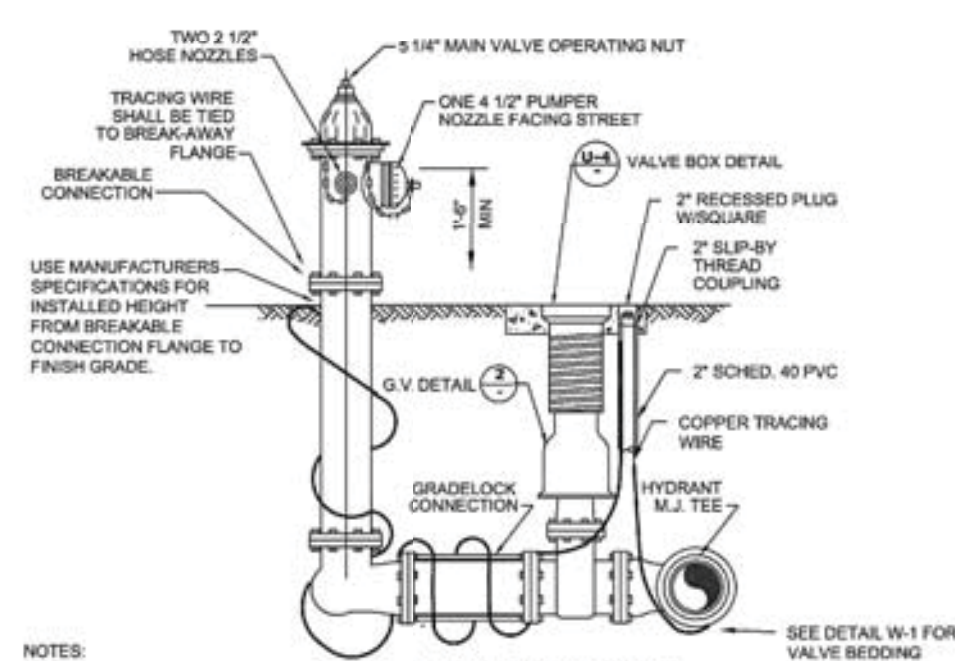
RESIDENTIAL WATER & FIRE METER (RESIDENTIAL USE ONLY)
N.T.S.

	CITY OF VENICE ENGINEERING DEPARTMENT 401 WEST VENICE AVE. VENICE FL 34285 (941) 486-2626 FAX (941) 480-3031	UTILITIES - WATER	DATE JAN. 2018
		RESIDENTIAL WATER & FIRE METER	SHEET NO. W-6

RESIDENTIAL WATER & FIRE METER DETAIL

NTS

7



- 1.) POTABLE WATER FIRE HYDRANTS SHALL BE PAINTED "SAFETY YELLOW".
- 2.) REUSE FIRE HYDRANTS SHALL BE PAINTED PANTONE PURPLE 520C AND TAGGED WITH A PERMANENT LABEL. "RECLAIMED WATER DO NOT DRINK".
- 3.) HYDRANT SHALL BE MUELLER SUPER CENTURION MODEL A23, AMERICAN BABSH WITH BREAK-AWAY FEATURE. ALL BOLTS SHALL BE SS (BONNET, SAFETY FLANGE, SHOE).
- 4.) RESTRAINED JOINTS SHALL BE USED BETWEEN TEE AND HYDRANT.
- 5.) HYDRANTS SHALL HAVE "OUT OF SERVICE" TAGS AND BE BAGGED UNTIL MAINS ARE ACCEPTED BY CITY.
- 6.) ALL WEEP HOLES SHALL BE PLUGGED.
- 7.) HYDRANT LOCATED AT LEAST 3' OR MORE FROM ANY STORM WATER PIPE OR DITCH AND AT LEAST 6' OR MORE FROM ANY SANITARY SEWER STRUCTURE.
- 8.) FOR CLEARANCE ISSUES, PLEASE REFER TO CURRENT FLORIDA FIRE PREVENTION CODE REQUIREMENTS.
- 9.) COPPERHEAD TRACING WIRE #12 AWG OR EQUAL SHALL BE USED. IT SHALL BE COLOR CODED TO REFLECT WHAT THE PIPE CARRIES. (BLUE = WATER, PURPLE = REUSE).
- 10.) ASSEMBLY SHALL BE BEDDED IN 8" OF CRUSHED SHELL AND INSTALLED AT PROPER BURIAL DEPTH.
- 11.) FIRE HYDRANT ASSEMBLY INCLUDES GATE VALVE.
- 12.) GRADELOCK CONNECTION TO BE USED BETWEEN VALVE AND HYDRANT. FUSION BONDED EPOXY. ROTATE TO FINAL GRADE.

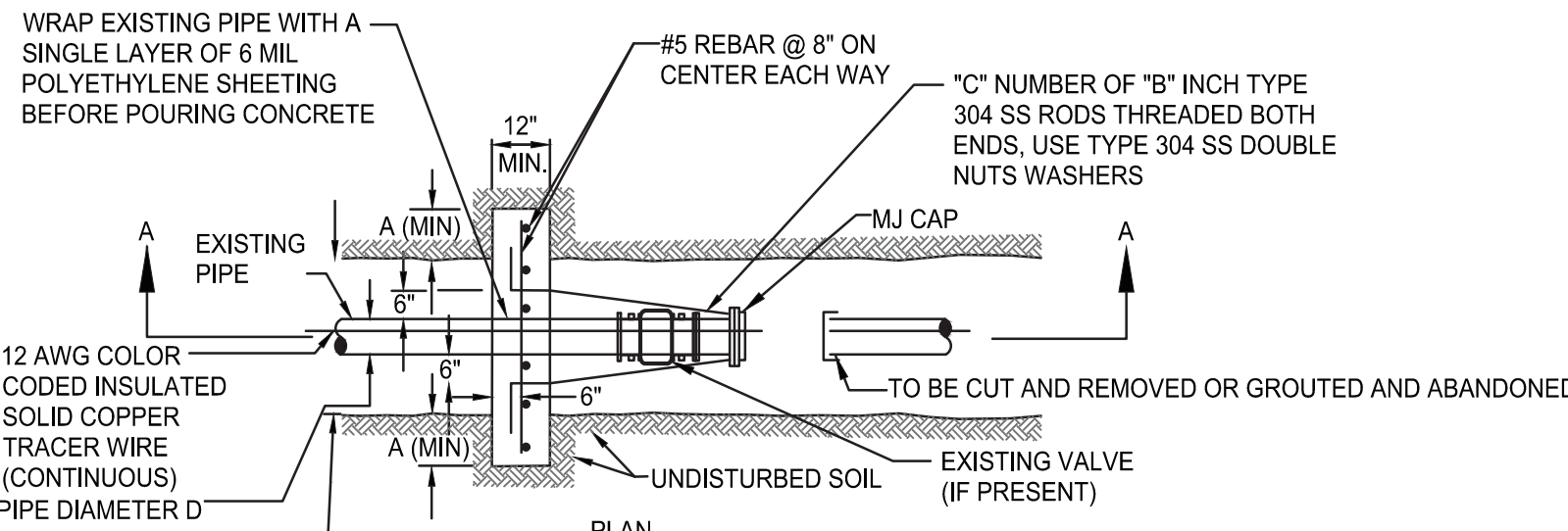
FIRE HYDRANT ASSEMBLY DETAIL
N.T.S.

	CITY OF VENICE ENGINEERING DEPARTMENT 401 WEST VENICE AVE. VENICE FL 34285 (941) 486-2626 FAX (941) 480-3031	UTILITIES - WATER	DATE JAN. 2018
		FIRE HYDRANT ASSEMBLY	SHEET NO. W-2

FIRE HYDRANT ASSEMBLY DETAIL

NTS

4



- 1.) ADDITIONAL REINFORCEMENT SHALL BE AS SPECIFIED BY THE ENGINEER OF RECORD.
- 2.) MINIMUM COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 3000 PSI.
- 3.) BEDDING, BACKFILL AND COMPACTION SHALL BE AS SPECIFIED IN DETAIL 5 ON DWG C-13.
- 4.) ALL FORM BOARDS SHALL BE REMOVED PRIOR TO BACKFILL.
- 5.) NO ALLOWANCE SHALL BE MADE FOR FRICTION BETWEEN THE PIPE WALL AND THE THRUST COLLAR.
- 6.) CHART FIGURES CALCULATED FOR THE 1000 PSF SOIL BEARING, 150 PSI LINE PRESSURE AND A 1.5 FACTOR OF SAFETY.
- 7.) RESTRAIN VALVE TO CONCRETE COLLAR BEFORE CUTTING PIPE TO BE REMOVED OR ABANDONED.
- 8.) USE COUPLINGS AS NECESSARY TO CONNECT RODS FROM VALVE TO CAP.
- 9.) FILL DISTURBED AREA UNDER PIPE TO REMAIN IN SERVICE WITH EXCAVATABLE FLOWABLE FILL.

PIPE SIZE D (INCHES)	DIMENSIONS (IN.)			TIE RODS REQD
	A	B	C	
4	15	1/2	2	2
6	22	1/2	2	2
8	30	5/8	2	2
10	39	5/8	3	3
12	49	5/8	5	5
16	70	3/4	5	5

WATER MAIN ABANDONMENT END RESTRAINT DETAIL

NTS

8

								DESIGNED	DYOUNG
								DRAWN	RWADE
								CHECKED	JBANKS
LTR.	DATE	REVISIONS		BY	APPRD.				

JonesEdmunds
CERTIFICATE OF AUTHORIZATION #1841
730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821
7230 KYLE COURT, SARASOTA, FLORIDA 34240 / (941) 3581440

**EAST GATE TERRACE PHASE 1
WATER MAIN REPLACEMENT PROJECT
CITY OF VENICE, FLORIDA**

DETAILS

APPROVED BY DOUGLAS R. YOUNG P.E. # 44204	DATE JAN. 2018	PROJECT NO. 22120-001-01
	SCALE NONE	DWG. NO. C14

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: June 29, 2018

To: All Prospective Proposers

Re: ITB# 3082-18: East Gate Water Main Replacement - Phase 1

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 June 27, 2018 at 2:00 P.M.

Peter Boers, Procurement Manager, opened the meeting

1. **Important dates:** Bids are due July 18, 2018 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 July 6, 2018 at 1:00 PM
3. Mr. Boers advised the bidders to read through *Instructions to Bidders*, but made note of the following Articles.
4. Article 10 Bid Security - 5% Bid Security is required.
5. Article 11 Contract Times – time to completion is 210 days from NTP.
6. Article 12 Liquidated Damages - Mr. Boers advised that the stipulated damages for this project are \$1532 per day.
7. 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**
8. Article 24 Contractors Insurance -Mr. Boers reviewed **EXHIBIT C: Insurance Requirements**.

- a. General Liability -\$1,000,000 per occurrence
 - b. Business Auto Liability - \$1,000,000 combined single limit
 - c. Worker's Comp per State Statute
 - d. Builders' Risk Installation Coverage to be provided prior to Notice to Proceed
9. Article 29 Local Preference – Local preference is **not applicable** to this bid.
10. Bid Form
11. 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.
12. Ms. Brendalee Westlake reviewed the SRF requirements and distributed the attached handout.
13. Mr. John Banks, Project Manager, and Mr. Doug Young, the City's consulting Engineer from Jones Edmunds, reviewed the scope of work and provided a brief overview of the project.
14. Mr. Boers opened the floor for bidder's questions. He advised the attendees 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.

REVISIONS:

The Bid Due Date and Time has been extended to July 31, 2018 at 2:00 PM.

The Cut-Off for questions has been extended to July 18, 2018 at 1:00 PM.

Replace Section 01200, Measurement and Payment in its entirety with the attached Section 01200, Measurement and Payment.

QUESTIONS

Q. Bid Item 16g – Unavoidable Obstructions, where are they located.

A. **Response: Unavoidable obstructions are items not covered under other private property restoration items. Two locations were estimated as placeholders.**

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

Florida Department of Environmental Protection / State Revolving Fund

FDEP Supplementary Conditions were included in the bid specifications – **MUST READ ENTIRE** Supplementary Conditions. You are responsible to meet all the requirements. Please note it is very important to understand that the Supplementary Conditions along with the forms included in the bid submittal must be incorporated into all your subcontracts (all-tier levels) including the Wage Decisions.

We are only outlining some of the Key Points: Division 0800 (00800-17)

Project Funded with SRF and State Legislative Appropriations Grant -

- FDEP/EPA/DOL – Access to Project Records and Project Sites
- Disadvantaged Business Enterprises: 5% Minority Business Enterprise/5% Women's Business Enterprise

Must show good faith effort: Read the Supplementary Conditions to review the efforts

- Debarment & Suspension – Certification page is included in the bid document, but will also need to check and verify all subcontractors.
- Equal Employment Opportunity – FDEP page 6-11 (**MUST READ CAREFULLY**) applies to Prime and all subcontractors. (Goals)
- Immigration Reform and Control Act: The Contractor shall use the US Department of Homeland Security's **E-Verify Employment Eligibility Verification System** to verify the employment eligibility of:
 - All new employees, during the term of this Agreement, to perform employment duties within the Florida; and
 - All new employees (including subcontractors and subrecipients) assignment by the Contractor to perform work pursuant to this Agreement.
- Federal Labor Standards Provisions – Davis-Bacon Act – Wage Decision – www.wdo.gov – **up to 10 days prior you must verify there have not been any updates** and if the wage decision changes you must use the new updated wage decision. (1/8/2016 for Highway and Heavy 1/5/2018)
- Select DBA WD's – Select – State/County/WD Number (Highway – Heavy) Please note when using two different wage decisions that have several **duplicate job** classifications you will either have to submit two separate certified payrolls weekly (one for Heavy and one for Highway) or **one certified payroll but use the highest rate and fringe for the job classifications that are duplicated**. This applies to the Prime and all subcontractors. The Prime contractor is responsible to review all subcontractors certified payrolls for accuracy.
- American Iron and Steel Provisions – www.epa.gov/cwsrf/state-revolving-fund-american-iron-and-steel-ais-requirement

AIS Training Material – All manufacturing processes, including application of coatings, must take place in the US. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating must take place in the US. Primarily Iron or Steel – Listed products must be made of greater than 50% Iron and Steel, Measured by Cost.

- **Appendix A: Certification of Compliance – Must be executed by Prime Contractor and by all subcontractors. Certification states "I certify that I have read the FDEP Supplementary and agree to incorporate the Article's into the bid or contract" "I agree that I will obtain identical certifications from prospective lower-tier construction subcontractors prior to the award of any lower-tier construction subcontracts".**

Debarment and Suspension – Equal Employment Opportunity – Immigration Reform and Control Act – Environmental Compliance – Federal Labor Standards – American Iron and Steel

HELPFUL LINKS:

- **American Iron and Steel (AIS)**

<http://www.epa.gov/cwsrf/state-revolving-fund-american-iron-and-steel-ais-requirement>

<http://www.epa.gov/cwsrf/american-iron-and-steel-requirement-guidance-and-questions-and-answers>
(Question and Answers)

http://www.epa.gov/sites/production/files/2015-09/documents/aiswebcast_04-30-14_final.pdf (Initial Webinar 2014)

http://www.epa.gov/sites/production/files/2015-09/documents/webcast-final-feb-2015_final-edits-for-web.pdf (Refresher Webinar 2015)

- **Wage Determinations Online**

www.wdol.gov

Selecting DBA WD's

<http://www.wdol.gov/dba.aspx>

Selection Criteria: State/County/Construction Type

- **E-Verify**

<http://www.uscis.gov/e-verify>

- **System for Award Management (SAM)**

<https://www.sam.gov/portal/SAM/#1>

Search Records

SECTION 01200
MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This Section covers methods of measurement and payment for items of work under this Contract.
- B. The total Contract Price shall cover all work required by the Contract Documents. All cost in connection with the proper and successful completion of the work, including furnishing all materials, equipment, and tools and performing all necessary labor and supervision to fully complete the work, shall be included in the unit price and lump-sum Bid prices. All work not specifically set forth as a pay item in the Bid Form or Bid Schedule shall be considered a subsidiary/ancillary obligation of the Contractor and all costs in connection with these subsidiary/ancillary obligations shall be included in the Bid(s) to provide a complete and functional Project.

1.02 RELATED WORK (NOT USED)

1.03 SUBMITTALS (NOT USED)

1.04 WORK SEQUENCE (NOT USED)

1.05 REFERENCE STANDARDS (NOT USED)

1.06 QUALITY ASSURANCE (NOT USED)

1.07 WARRANTIES

- A. Warranties shall be in accordance with General Conditions, Supplementary Conditions, and Specification Section 01780, Warranties and Bonds.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall adhere to the requirements specified in Section 01650, Delivery, Storage, and Handling, for storing and protecting the items specified in this Section.

1.09 QUALIFICATIONS (NOT USED)

1.10 EXCAVATION, TRENCHING, AND CLEARING

- A. Except where otherwise specified, the unit price or lump-sum price bid for each item of work which involves excavation, trenching, clearing, grubbing, or disposal of cleared and grubbed materials shall include all costs for such work. No direct payment shall be made for clearing, grubbing, disposal of cleared or grubbed materials, excavation, trenching, disposal of surplus excavated material, handling water (and groundwater) and purchasing and hauling of required fill material. All excavation and trenching shall be unclassified as to materials which may be encountered; in addition, trenches shall be unclassified as to depth, unless otherwise stated.

1.11 LUMP SUM

- A. For lump-sum items, payments shall be made to the Contractor in accordance with an accepted Progress Schedule of Values on the basis of actual work completed and accepted by the Owner at the final completion of the Project.

1.12 UNIT PRICE

- A. For unit price items, payment shall be made based on the actual amount of work accepted by the Owner and for the actual amount of materials in place at the final completion of the Project, as confirmed by the final measurements.
- B. After the work is completed and before final payment is made, the Engineer will make final measurements, with all required assistance from the Contractor, to determine the quantities of various items of work accepted as the basis for the final unit price payment.

1.13 PAYMENT FOR INCREASED OR DECREASED QUANTITIES

- A. When alterations in the quantities of unit price work not requiring a Change Order(s), as herein provided for, are ordered and performed, the Contractor shall accept payment in full at the Contract unit price multiplied by the actual quantities of work constructed and accepted by the Owner at the completion of the project.
- B. The actual percentage of each lump sum bid item completed by the Contractor and accepted by the Owner at the final completion of the Project will be paid to the Contractor.

1.14 DELETED ITEMS

- A. Should any items contained in the Bid Schedule(s) be found unnecessary for the proper completion of the work contracted, the Engineer may eliminate such items from the Contract. This action shall in no way invalidate the Contract and no financial allowance or compensating payment for anticipated profit, overhead, etc., will be made for items so eliminated in making final payment to the Contractor.

1.15 PARTIAL PAYMENTS

- A. Partial payments shall be made monthly as the work progresses. Partial payment shall be made subject to the provisions of the General and Supplementary Conditions.

1.16 PAYMENT FOR STORED MATERIAL DELIVERED TO THE PROJECT

- A. When requested by the Contractor and at the discretion of the Owner, payment may be made for all or part of the value of acceptable materials and equipment to be incorporated into bid items, which have not been used, and which have been delivered to the construction site or placed in storage places acceptable to the Owner. The Contractor shall provide receipts for all stored material items requested for reimbursement which clearly identify the stored material item, where it is to be constructed, the unit cost of the item, as well as the total cost of the delivered item(s), the quantity of the item, the brand name of the item, and the supplier. Note that there are additional documentation requirements and storage requirements within the Contract Documents that must also be met before the Contractor can be reimbursed for these stored materials.
- B. No payment shall be made for fuels, supplies, installation or connection hardware, lumber, false work, or other similar materials or on temporary structures or other work (items) of any kind which are not a permanent part of the Contract. Items having a value of less than \$2,500 shall not be compensated for as a stored material item.

1.17 FINAL PAYMENT

- A. If requested by the Engineer, the Contractor shall field verify all quantities in dispute by using visual observation, taped measurements, or other methods designated by the Engineer. The field verification shall be made in the presence of the Engineer and agreed to by both the Engineer and the Contractor. The Engineer will prepare a final adjusting Change Order which will adjust the final quantities of the project Bid Schedule to reflect the actual work accepted by the Owner and for which the Contractor will be compensated.

1.18 SCHEDULE OF VALUES

- A. A schedule of values for the lump-sum bid items and some of the unit price bid items as required by the Engineer shall be submitted and accepted before the first pay request is approved by the Engineer. The schedule of values shall be based on the prices bid in the Bid Schedule(s). Prices bid in the Bid Schedule(s) cannot be changed in the schedule of values; they can only be broken down into more detail so that the Engineer can more accurately review and approve the Contractor's pay application for the completed work.

1.19 MISCELLANEOUS CONSTRUCTION ITEMS

- A. When pipe/service lines are constructed across a road, the road shall not be cut to perform this construction unless authorized in writing by the Engineer. Service lines are to be bored, jack and bored, or horizontally directionally drilled (HDD) under the road. Jetting of water lines or water service lines will not be allowed.
- B. The Contractor shall take all precautions necessary to protect existing utilities, roads, and miscellaneous items from damage during construction.
- C. The Contractor shall repair, relocate, or replace existing utilities, roadways, and miscellaneous items to pre-construction conditions.
- D. All repairs, relocations, and replacements necessary are considered incidental to the work and will be at the Contractor's cost, with no cost to the Owner.
- E. The unit-price bid items and lump-sum bid items for all pipe items shall constitute full compensation for furnishing, laying, jointing, and testing of pipe; dewatering; excavation and backfill; restoration and cleanup. All water lines, which are to be paid for per linear foot in the Bid Schedule, will be measured for payment only on a horizontal plane after installation, unless otherwise noted.
- F. Payment for the water services, fire hydrants, and isolation valve bid items shall not be made until the associated Water Service Cards, Fire Hydrant Cards, and Isolation Valve Cards have been properly filled out, signed by the Contractor, and accepted by the Engineer as completed installations. Samples of the Water Service Card, Fire Hydrant Card, and Isolation Valve Card are located at the end of Specification Section 01785, Record Documents. The Contractor shall make all required copies of the cards for use in the work.
- G. The Contractor shall have the Engineer observe and document the installation of each underground fitting on the project. If the installation of any fitting is not confirmed and documented by the Engineer, it shall not be paid for by the Owner.

PART 2 PAY ITEM DESCRIPTIONS

2.01 BID ITEMS

The descriptions provided in the following Paragraphs are to be used by the Bidder in preparing the Bid Schedule(s). They generally indicate how the major workscope items and their respective costs are to be separated into the line items listed in the Bid Schedule(s). These descriptions are not fully representative nor all inclusive of the work required to complete the project in accordance with the Contract Documents. It is the Bidder's responsibility to include all required costs within the most appropriate line item(s).

Item 1. Mobilization/Demobilization (not to exceed 5% of Total Base Bid)—This lump-sum item shall include and cover the costs for performing construction, preparatory, and overhead operations, including but not limited to movement of personnel and equipment to and from the site, sanitary facilities, project administration and management, insurance, bonds, Owner and Engineer indemnification, temporary utilities, project signs, permits related to construction, redline updates to project as-built drawings, and all other similar activities and facilities necessary for executing this project. This item shall not exceed 5% of the Total Base Bid. The Contractor will be paid 40% of this item upon completion of mobilization and 3% per month for general conditions, with the remainder paid upon demobilization.

Item 2. Environmental Protection (not to exceed 2% of the Total Base Bid)—This lump-sum item shall include but not be limited to all costs for providing a comprehensive environmental protection program for the project site and other areas that may be affected by the construction. This includes providing labor and materials necessary to prevent environmental damage to the ground, water, and air in conformance with all local, state, and federal laws. Examples include control of stormwater, erodible soils, noise, dust, pollutants, trash, waste, pumping discharge, and any other substance or activity that may adversely impact the environment. The Contractor will be paid 40% upon delivery and setup of the material, and the remainder will be prorated equally over the construction period. This item shall not exceed 2% of the Total Base Bid.

Item 3. Maintenance of Traffic—This lump-sum item shall include but not be limited to all costs for providing all labor, signage, barricades, and other equipment necessary to provide traffic control in accordance with Florida Department of Transportation (FDOT) Standard Index 600 Series for all phases of work and prepare and implement Maintenance of Traffic (MOT) plans in accordance with FDOT and City of Venice requirements and all other MOT plans as may be required by local, county, or state agencies. The MOT plan shall be submitted to the City of Venice and the Engineer for review and approval. The Contractor shall be paid 50% upon initial delivery and set-up of the materials, and the remaining 50% shall be prorated equally over the construction duration.

Item 4. Grout and Abandon Existing Water Main—Measurement shall be based on the linear feet of pipe, the size and material indicated, and grouted as measured in plan view along the

centerline of the pipe. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to grout all pipe as indicated on the Drawings and shall include full compensation for all set up, grout, pumping, caps, closing or opening valves, and disposal of pipe removed to allow capping and grouting as indicated on the Drawings, removing valve boxes, and restoring to pre-construction condition or better of affected areas.

Item 5. Water Main—Measurement shall be based on the laying length of pipe of the size indicated in linear feet actually placed and accepted as measured in plan view along the centerline of the completed pipe within the project area indicated. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install pipe as shown on the Drawings and shall include full compensation for all site work, excavation, jointing, joint restraint, pipe supports, tracing wire, detectable tape, backfill, pressure testing, bacteriological sampling, removal and replacement of obstacles including but not limited to street signs and mailboxes required for installation, restoration of all sod and other landscaping, restoration of any sidewalks, driveways, curbing, or other items damaged by the Contractor, and all other restoration not covered by another Bid Item as may be necessary to return the work area to at least equal or better condition, complete and ready for service.

Item 6. Water Service – Main to Meter—Measurement shall be the quantity of each type of water service constructed and accepted by the Engineer. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install each service by type and shall include full compensation for all tapping of water mains, tapping saddles, corporation stops, polyethylene tubing of the size indicated on the Drawings, tracing wire, PVC casings, curb stops, road crossings, meter boxes, pressure testing, all restoration necessary within the right-of-way not covered under another payment line item, and bacteriological sampling required for installation, complete and ready for service.

Item 7. House Service Line – Meter to House—Measurement shall be based on the laying length of pipe indicated in linear feet actually placed and accepted as measured in plan view along the centerline of the completed pipe within the project area indicated. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install water service lines from the meter to the house service connection or other connection as indicated on the Drawings including but not limited to pipe, fittings, and removal of existing meters and meter boxes. This item does not include restoration on private property. Restoration on private property is included in Item 16, Private Property Restoration. If a new backflow preventer is required, the Owner will provide the backflow preventer for installation by the Contractor's plumber. This item does not include backflow preventers. Backflow preventers are to be included in Item 8, Reduced Pressure Principle Assemblies and Item 9, Dual Check Valve Assemblies.

Item 7a. Contractor/Property Owner Coordination—The Contractor shall provide the following coordination services:

1. Contacting the property owner to schedule an installation date.

2. Meeting with the property owner before installation to go over the designed service route. The Owner's representative shall be present at the meeting.
3. Discussing with the property owner any changes to the property since the issuance of Bid Documents, obstructions in the designed service route not shown on the Drawings, and other items relevant to the installation.
4. Meeting with the property owner after construction to ensure that there are no pending issues or concerns.

Payment shall be made for the number of property owners that the Contractor has provided with coordination services. The Contractor shall maintain a log book that records the coordination hours. The log book shall include the date, address, time/duration, and description of coordination efforts for each event. The Contractor shall be compensated for 30 minutes of coordination per each affected property.

Item 8. Reduced Pressure Principal Assemblies—The Contractor shall provide all labor, equipment, and materials to remove and relocate existing reduced pressure (RP) principal assemblies on water services to be relocated. Relocated RP assemblies shall meet all applicable codes. RP assemblies are required for all non-residential (i.e., commercial/industrial) customers and residential customers that use surface water or potable water for irrigation. The RP assembly installation shall include but may not be limited to:

1. Removing the RP assembly from the existing service.
2. Relocating the RP assembly to the new service, including miscellaneous fittings, piping, and accessories necessary for a complete installation meeting current plumbing codes.
3. Testing.
4. Repairs if testing fails or there are leaks present after installation.
5. If required, installing a new Owner-supplied RP assembly meeting current plumbing codes.

Note: Every RP is required to have some type of thermal expansion relief, either a Thermal Expansion Tank or a Relief Valve. If a residential or commercial service has an existing RP above grade and in conformance with current plumbing codes, it must be relocated by the Contractor's licensed plumber. If the existing RP does not conform to current plumbing codes, the relocated RP must be brought up to code by the Contractor's plumber. If an RP does not exist and is required, the Owner will provide an RP assembly to be installed by the Contractor's plumber in conformance with current plumbing codes. The Contractor shall coordinate timing of the installation of the RP and thermal expansion relief with the homeowner.

Item 9. Dual Check Valve Assemblies—The Contractor shall provide all labor, equipment, and materials to remove existing dual check valve (DuC) assemblies on water services to be relocated. Relocated DuC assemblies shall meet all applicable codes. DuC assemblies are required for residential customers that use well water or reclaimed water for irrigation. The DuC assembly installation shall include but may not be limited to:

1. Removing the backflow device (BFD) from the existing service.
2. Relocating the DuC to the new service, including miscellaneous fittings, piping, and accessories necessary for a complete installation meeting current plumbing codes.
3. Repairs if there are leaks present after installation.
4. If required, installing a new Owner-supplied DuC meeting current plumbing codes.

Note: Residential customers that do not have a well or irrigation system are not required to have a BFD installed and will have any existing BFD removed. If a residential service has an existing DuC above grade, the device is to be relocated below grade by the Contractor's licensed plumber. The existing thermal expansion must be relocated to the water service connection at the house by the Contractor's plumber. If thermal expansion did not exist on an existing DuC, it must be provided on any relocated DuC and installed by the Contractor's plumber. The relief valve can be installed conveniently at the riser piping entering the home near the service valve or behind a hose bib. Pressure Reducing Valves are not required or desired. If a DuC does not exist, and is required, the Owner will provide a DuC to be installed by the Contractor's plumber in conformance with current plumbing codes. The Contractor shall coordinate timing of the installation of the DuC and thermal expansion with the homeowner.

Item 10. Fittings (Ductile Iron)—Measurement for all fittings shall be the number of each size, material, and type of fitting installed and accepted by the Engineer. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install each fitting by size, material, and type and shall include full compensation for fittings, glands, gaskets, bolts, nuts, and restraint systems as specified complete and ready for service.

Item 11. Valves—Measurement for all valves shall be the number of each size and type of valve installed and accepted by the Engineer. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install each valve by size and type and shall include full compensation for valves, bolts, nuts, restraint systems, valve pads, identification disks, tracer wire, and tracer wire ports as specified complete and ready for service.

Item 12. 6-inch Tapping Valves—Measurement for 6-inch Tapping Valves shall be the number of each 6-inch tapping valve installed and accepted by the Engineer. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install each 6-inch tapping valve and shall include full compensation for valves, bolts, nuts, restraint systems, valve pads, identification disks, tracer wire, and tracer wire ports as specified complete and ready for service. Payment for tapping valves shall include all incidentals, including tapping sleeves, pressure testing, and tapping the water main.

Item 13. Fire Hydrant Assembly—Measurement for fire hydrants shall be the number of each fire hydrant installed and accepted by the Engineer. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install each fire hydrant

and shall include full compensation for fire hydrants, isolation gate valves, valve pads, identification disks, tracer wire port, pipe from valve to fire hydrant, tracer wire, bolts, nuts, and restraint systems as specified complete and ready for service.

Item 14. Auto Flusher—Measurement for auto flushers shall be the number of each auto flusher installed and accepted by the Engineer. Payment shall be made at the applicable Contract unit price for furnishing all labor, materials, and equipment to install each auto flusher and shall include full compensation for auto flushers, restrained tapped main end caps, corporation stops, valve boxes, polyethylene tubing, fittings, curb stops, meters, and meter boxes as specified complete and ready for service.

Item 15. Asphalt Pavement Restoration—The Contractor shall provide all labor, equipment, and certain materials to restore asphalt pavement that has been damaged or removed due to the installation of the water main (Bid Item 5b). Work for this bid item shall include but may not be limited to:

1. Excavation.
2. Placing, grading, and compacting sub-base and/or base.
3. Furnishing and placing or replacing the damaged or removed pavement.
4. Milling, grading, levelling, compacting, and/or smoothing to provide a uniform longitudinal profile and cross-section with the existing pavement.
5. Disposal of all surplus existing materials.

Payment shall be made for the number of square feet of asphalt pavement installed and accepted by the Owner and/or Engineer. Pavement restoration shall be in as good or better condition as before construction.

Item 16. Private Property Restoration

Item 16a. Sod—The Contractor shall provide all labor, equipment, and certain materials to restore sod that has been damaged due to the installation of the water service pipe (Bid Item 7). Work for this bid item shall include but may not be limited to:

1. Earth bed preparation.
2. Providing, placing, compacting, and finishing topsoil.
3. Furnishing and placing sod.
4. Furnishing and placing stakes.
5. Rolling and tamping sod.
6. Mowing sod.
7. Replacing defective or deteriorated sod.
8. Maintaining and caring of sod in place.

Payment shall be made for the number of square feet of sod installed and accepted by the Owner and/or Engineer. Private property restoration shall be in as good or better condition as before

construction. Unless approved by the Owner and/or Engineer, limits of sod restoration shall be 18 inches wide over the water service pipe route.

Item 16b. Brick Pavers—The Contractor shall provide all labor, equipment, and certain materials to restore brick pavers that have been damaged due to the installation of the water service pipe (Bid Item 7). Work for this bid item shall include but may not be limited to:

1. Excavation.
2. Placing, grading, and compacting sub-base and/or base.
3. Furnishing and placing or replacing the damaged brick pavers.
4. Grading, levelling, compacting, and/or smoothing to provide a uniform longitudinal profile and cross-section with the existing brick pavers.
5. Disposal of all surplus existing materials.

Payment shall be made for the number of square feet of brick pavers installed and accepted by the Owner and/or Engineer. Private property restoration shall be in as good or better condition as before construction. Unless approved by the Owner and/or Engineer, limits of brick paver restoration shall be 36 inches wide over the water service pipe route.

Item 16c. Asphalt/Concrete Driveway—The Contractor shall provide all labor, equipment, and certain materials to restore asphalt/concrete driveways that have been damaged due to the installation of the water service pipe (Bid Item 7). Work for this bid item shall include but may not be limited to:

1. Excavation.
2. Placing, grading, and compacting sub-base and/or base.
3. Furnishing and placing or replacing the damaged driveway.
4. Milling, grading, levelling, compacting and/or smoothing to provide a uniform longitudinal profile and cross-section with the existing driveway.
5. Disposal of all surplus existing materials.

Payment shall be made for the number of square feet of asphalt/concrete driveways installed and accepted by the Owner and/or Engineer. Private property restoration shall be in as good or better condition as before construction. Unless approved by the Owner and/or Engineer, limits of asphalt/concrete driveway restoration shall be 24 inches wide over the water service pipe route.

Item 16d. Asphalt/Concrete Walkway—The Contractor shall provide all labor, equipment, and certain materials to restore asphalt/concrete walkways that have been damaged due to the installation of the water service pipe (Bid Item 7). Work for this bid item shall include but may not be limited to:

1. Excavation.
2. Placing, grading, and compacting sub-base and/or base.
3. Furnishing and placing or replacing the damaged walkway.

4. Milling, grading, levelling, compacting, and/or smoothing to provide a uniform longitudinal profile and cross-section with the existing walkway.
5. Disposal of all surplus existing materials.

Payment shall be made for the number of square feet of asphalt/concrete walkways installed and accepted by the Owner and/or Engineer. Private property restoration shall be in as good or better condition as before construction. Unless approved by the Owner and/or Engineer, limits of asphalt/concrete walkway restoration shall be 24 inches wide over the water service pipe route.

Item 16e. Loose Stone/Gravel—The Contractor shall provide all labor, equipment, and certain materials to restore loose stone/gravel that has been displaced due to the installation of the water service pipe (Bid Item 7). Work for this bid item shall include but may not be limited to:

1. Removing loose stone/gravel.
2. Furnishing and placing or replacing the loose stone/gravel.
3. Grading and levelling to provide a uniform longitudinal profile and cross-section with the existing loose stone/gravel.
4. Disposal of all surplus existing materials.

Payment shall be made for the number of square feet of loose stone/gravel placed and accepted by the Owner and/or Engineer. Private property restoration shall be in as good or better condition as before construction. Unless approved by the Owner and/or Engineer, limits of loose stone/gravel replacement shall be 18 inches wide over the water service pipe route.

Item 16f. Landscaping—The Contractor shall provide all labor, equipment, and certain materials to replace landscaping that has been damaged due to the installation of the water service pipe (Bid Item 7). Work for this bid item shall include but may not be limited to:

1. Preparing earth bed.
2. Providing and placing landscaping.
3. Maintaining and caring of landscaping in place.

Payment shall be made for the number of square feet of landscaping placed and accepted by the Owner and/or Engineer. Private property restoration shall be in as good or better condition as before construction. Unless approved by the Owner and/or Engineer, limits of landscaping restoration shall be 18 inches wide over the water service pipe route.

Item 16g. Unavoidable Obstructions—The Contractor shall provide all labor, equipment, and certain materials to work around unavoidable obstructions encountered during the installation of the water service pipe (Bid Item 7). Examples of these unavoidable obstructions include walls and above-ground wood decks and patios.

Payment shall be made for the number of unavoidable obstructions encountered during the installation of the water service pipe. Private property restoration shall be in as good or better condition as before construction.

Item 17. Record Drawings—Payment of the lump-sum bid item in the Bid Form shall be full compensation for furnishing all labor, materials, equipment, transportation, tools, surveying, and incidentals required to complete and provide Record Drawings in accordance with the Contract Documents (Sections 01330, Submittals and Acceptance, and 01785, Record Documents) including updating electronic versions of the Drawings in AutoCAD, identifying items that were revised during the project or addenda, having all Drawings signed and sealed by a Florida-registered professional land surveyor, and providing signed-and-sealed copies of the Record Drawings. Once the Record Drawings have been submitted to the Engineer in AutoCAD format, reviewed, and determined by the Engineer to be complete according to the Specifications requirements, the entire lump-sum price will be paid to the Contractor.

Item 18. Owner's Allowance—The Owner's Allowance shall be as indicated. Payment shall be made to the Contractor, at the sole discretion of the Owner, for additional Work requested by the Owner that is not covered by the Scope of Work identified in this Contract. The Owner's Allowance will be used only with the prior written approval of the Owner. A Scope Description and Fee Breakdown shall be provided to the Owner for any proposed use of the Owner's Allowance.

Item 19. Permit Fee Allowance—Payment will be made to the Contractor based on actual invoiced amounts paid by the Contractor to obtain required Building Permits and inspections. Payment will not be made for:

1. Contractor premiums or markups.
2. Fees incurred due to the Contractor's negligence.
3. Permits required for the Contractor's convenience, but not required by the Contract Documents or the Engineer.
4. Fees and costs associated with utility services to temporary construction trailers required by the Contractor during construction.

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. 2

Date: July 20, 2018

To: All Prospective Proposers

Re: ITB# 3082-18: East Gate Water Main Replacement - Phase 1

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.

QUESTIONS

Q. Can you please tell me if Appendix A and D of the solicitation need to be submitted with the bid or is this something that is submitted if low bidder?

A. Yes, Appendices A and D must be submitted with your bid along with the MBE/WBE information.

Q. Can you please provide the bid schedule in an excel format?

A. An Excel format Bid Schedule will be posted to DemandStar as a separate attachment.

Q. In addendum 1, items 7 and 8 in measurement and payment it states that the City will provide backflow preventers and RP backflow assemblies for the project plumber to install for customers who are required to have them but do not currently have one. I would like to know if the city is supplying the required 2nd meter box for the Dual Checks and if the RP's will be assembled with legs, ready to install, or if the plumber will be required to supply the legs and assemble them before installation?

A. The City will supply the backflow devices to the Contractor. The Contractor is responsible to purchase and install all incidental materials such as meter boxes, legs, etc. required to complete the installations in accordance with the contract documents, which include the City's applicable standard details.

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