



SPECIFICATIONS FOR ASHLEY WATER TREATMENT PLANT WELL NO. 2 PUMP ADDITION



City of Wildwood, Florida

April 2023

Kimley-Horn Project No. 142173353

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1700 SE 17th Street, Suite 200
Ocala, Florida 34471
352 438 3000

Kimley»»Horn

SPECIFICATIONS FOR ASHLEY WATER TREATMENT PLANT WELL NO. 2 PUMP ADDITION

THIS IS TO CERTIFY THAT THE ENCLOSED
CIVIL ENGINEERING CALCULATIONS WERE
PERFORMED BY ME OR UNDER MY DIRECT
SUPERVISION.

City of Wildwood, Florida

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1700 SE 17th Street, Suite 200
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352-438-3000

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FLORIDA REGISTRATION NO. 90813
KIMLEY-HORN REGISRTY NO. 35106

SECTION 00002 – TABLE OF CONTENTS

<u>SECTION</u>	<u>DESCRIPTION</u>
00020	Invitation to Bid
00100	Instructions to Bidder
00300	Bid Form
00302	Public Entity Crimes Statement
00303	Drug Free Workplace Form
00304	Immigration Affidavit Certification
00500	Agreement
00622	Application for Payment
00625	Substantial Completion
00630	Performance and Payment Bond
00650	Certificate of Insurance
00700	General Conditions
00800	Supplemental Conditions
00801	Special Provisions
01150	Measurement and Payment
01300	Submittals
01410	Testing Laboratory Services
01500	Pre-Construction and Post-Construction Video
01700	Contract Closeout
01720	Project Record Drawings
01730	Operation and Maintenance Manuals
02016	Existing Utilities and Underground Structures
02110	Site Clearing
02150	Dewatering
02200	Earthwork, Excavation, and Backfill
09900	Painting
13300	Process Instrumentation and Control System
13310	Process Instrumentation and Control Field Instruments
16050	Electrical – General Provisions
16108	Misc. Equipment
16110	Raceway and Fittings
16120	Wires and Cables
16150	Motors
16450	Ground Systems
Appendix A	Geo-Tech, Inc. Geotechnical Report dated November 20, 2014
Appendix B	Pre-Ordered Equipment

Appendix C

Barney's Pumps Inc Equipment dated January 25, 2023

Appendix D

Smart Energy Solutions Report Dated June 6, 2022

END OF SECTION

SECTION 00020 – INVITATION TO BID

ASHLEY WATER TREATMENT PLANT WELL NO. 2 ADDITION

DATE: April 25, 2023 Project Number: 142173353

NOTICE IS HEREBY GIVEN that the City of Wildwood will receive sealed bids for construction of the **Ashley Water Treatment Plant Well No. 2 Addition**. All contractors licensed by the State of Florida are hereby invited to submit a bid on the above referenced project. Bids will be received until 2:30 PM, E.S.T., on June 1, 2023, at the following address: City Hall, 100 N. Main Street, Wildwood, FL 34785. For more information, contact Stacy Boney, Kimley-Horn and Associates, Inc. at (352) 438-3000.

DESCRIPTION OF WORK: All work for the Project shall be constructed in accordance with the Drawings and Specifications prepared by the Engineer. Bids shall be submitted for furnishing, delivering, and installing all materials, equipment, and services, including labor for the Work, which involves the following activities:

Installation of a new well pump for the Ashley WTP to increase the capacity of the Ashley WTP to 720,000 gpd and provide backup well redundancy. The project will also include installation of well head piping, valves, flow meter, 50 LF of 8-inch C900 Dr-18 PVC yard piping, pump control panel, associated electrical conduit, wiring, and controls, and a third chemical metering pump and associated piping for disinfection.

CONTRACT TIME: Construction time to achieve Substantial Completion is 90 consecutive calendar days from the date of the Notice to Proceed, with an additional 30 consecutive calendar days to achieve Final Completion. Total construction duration is 120 days.

PROJECT MANUAL AND DRAWINGS: Copies of the Project Manual and Drawings are available for review at the City of Wildwood City Hall or the Office of the Engineer. Bid packages may be obtained by contacting the office of the Engineer:

Kimley-Horn and Associates, Inc.
1700 SE 17th Street, Suite 200
Ocala, Florida 34471
352-438-3000
E-mail: stacy.boney@kimley-horn.com

All bids shall be prepared using the Project Manual and Drawings. All questions must be in writing via e-mail to Engineer. Addenda will be sent via e-mail to all plan holders up to 72 hours before the Bid closing time. The Owner/Engineer is not responsible for delivery of addenda to prospective bidders.

PRE-BID MEETING: A non-mandatory pre-bid meeting will be held for this project at **10:00 AM** on **May 11, 2023**, at the City of Wildwood City Hall, 100 North Main Street, Wildwood, Florida 34785.

BID SECURITY: A 5% bid security will be required for this project.

PERFORMANCE AND PAYMENT BOND: The Owner will require that the Contractor furnish a Performance and Payment Bond in an amount equal to 100% of the Contract Price. All Payment and Performance Bonds shall be secured from or countersigned by an agency or surety company recognized in good standing and authorized to do business in the State of Florida.

END OF SECTION

SECTION 00100 - INSTRUCTIONS TO BIDDERS

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:
- A. Issuing Office – The office from which the Bidding Documents are to be issued.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

- 2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid.
- 2.02 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.
- 2.03 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 authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within ten (10) days of Owner's request, Bidder shall submit (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information:
- A. Evidence of Bidder's authority to do business in the state where the Project is located.
- B. Bidder's state or other contractor license number, if applicable.
- C. Subcontractor and Supplier qualification information; coordinate with provisions of Article 12 of these Instructions, "Subcontractors, Suppliers, and Others."
- D. Other required information regarding qualifications
- 3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.
- 3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER’S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 Site and Other Areas

- A. The Site is identified in the Bidding Documents. By definition, the Site includes right-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 Existing Site Conditions

- A. Subsurface and Physical Conditions; Hazardous Environmental Conditions
 - 1. The Supplementary Conditions identify:
 - a. Those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.
 - b. Those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
 - c. Technical Data contained in such reports and drawings.
 - 2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
- B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.
- C. Adequacy of Data: 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 unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions.

4.03 Site Visit and Testing by Bidders

- A. Bidder shall conduct the required Site visit during normal working hours and shall not disturb any ongoing operations at the Site.
- B. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations,

investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.

- C. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- D. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 Owner's Safety Program

- A. Site visits and work at the Site may be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.05 Other Work at the Site

- A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01 Bidder Responsibility

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

- A. Examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;
- B. Visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. Become familiar with and satisfy itself as to all 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 adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings,

2. Reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. Consider the information known to Bidder itself; 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 the Bidding Documents, with respect to the effect of such information, observations, 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; and (3) Bidder's safety precautions and programs;
- F. Agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price 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 the work 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, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;
- I. Determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and
- J. Agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 – PRE-BID CONFERENCE

- 6.01 A **non-mandatory** pre-bid conference will be held at the time and location stated in the invitation or advertisement to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders will be issued such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than seven days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of five percent (5%) of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

9.01 The number of days within which, or the dates by which the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract for the Work, as awarded, will be based on materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.

11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.
- 12.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.
- 12.03 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed for the Work. If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. 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 apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.
- 12.04 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, or other individuals or entities. Declining to make requested substitutions will 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 subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

ARTICLE 13 – PREPARATION OF BID

- 13.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on 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 section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
- B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."
- 13.02 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.
- 13.03 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.

- 13.04 A Bid by an individual shall show the Bidder's name and official address.
- 13.05 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.06 All names shall be printed in ink below the signatures.
- 13.07 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.08 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.09 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID

14.01 Unit Price

- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.
- B. The "BID AMOUNT" for each unit price Bid item will be the product of the "QUANTITY" (which is set forth in the Bid Form) for the item and the corresponding "UNIT PRICE" offered by the Bidder. The total of all unit price Bid items will be the sum of these "BID AMOUNTS"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

14.02 Allowances

- A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 13.02.B of the General Conditions.

ARTICLE 15 – SUBMITTAL OF BID

- 15.01 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to Jason McHugh, City Manager, Wildwood City Hall, 100 N. Main Street, Wildwood, FL 34785.

- 15.02 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

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

ARTICLE 17 – OPENING OF BIDS

- 17.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 18.01 All Bids will 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 this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

- 19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.
- 19.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid for the Work inclusive or exclusive of any alternates at its sole discretion.
- 19.03 Evaluation of Bids
- A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.
- 19.04 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.
- 19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 20 – BONDS AND INSURANCE

20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner. Within 30 days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

END OF SECTION

SECTION 00300 – BID FORM

1. The undersigned Bidder does hereby declare that he has carefully examined the Invitation to Bid, the Instructions to Bidders, Project Manual and Construction Plans, and project addenda relating to the above-entitled matter and the work, and has also examined the site.
2. The undersigned Bidder hereby declares that he has based his proposal on the conditions as they exist on site and has noted all items of work required of the project that is not illustrated on the plans.
3. The undersigned does hereby offer and agree to furnish all materials, to fully and faithfully construct, perform and execute all work in the above titled matter in accordance with the Plans, Drawings and Specifications relating thereto.
4. The undersigned does hereby declare that the prices so stated cover all expenses of every kind incidental to the completion of said work, and the contract therefore, including all claims that may arise through damages or any other causes whatsoever.
5. The undersigned does hereby declare that he shall make no claim on account of minor variation of the approximate estimate in the QUANTITIES or work to be done, nor on account of any misunderstanding or misconception of the nature of the work to be done or the grounds or place where it is to be done.
6. The Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.
7. The undersigned does also declare and agree that he will commence the work within ten (10) days after notification by the ENGINEER to do so and will complete the work fully and in every respect on or before the time specified in said contract.
8. The undersigned further agrees that the UNIT PRICES submitted on the Bid Form shall govern all errors in extension or addition and shall void the total base bid submitted on the attached sheet. The corrected extension and addition of all items shall be considered to be the correct base bid for comparison purposes.
9. The undersigned further agrees that the UNIT PRICES submitted on the Bid Form will expire if a contract is not executed within ninety (90) days from the date of bid deadline, and that the Contractor will be fully released from any obligations of this Bid Form.
10. The undersigned agrees that this bid is based on substantially completing the project within two hundred seventy (270) calendar days and final completion within three hundred fifteen (315) calendar days from the date of Notice to Proceed. The Contractor further agrees to pay, as liquidated damages, the sum of one thousand (\$1,000) dollars for each consecutive calendar day thereafter.
11. The Bidder acknowledges having received the following project addenda:

No. _____, Date: _____	No. _____, Date: _____
No. _____, Date: _____	No. _____, Date: _____
No. _____, Date: _____	No. _____, Date: _____
12. By submission of this bid, each bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, that this bid has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this bid with any other bidder or with any competitor.

**BID FORM
CITY OF WILDWOOD
ASHLEY WTP WELL NO.2 WELL PUMP ADDITION**

ITEM #	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	BID AMOUNT
I. GENERAL					
1	MOBILIZATION/DEMOLITION	LS	1		
2	SITE WORK AND PREPARATION	LS	1		
3	SURVEY AND RECORD DRAWINGS	LS	1		
4	RESTORATION, COMPLETE	LS	1		
II. WATER SUPPLY DISTRIBUTION					
5	VERTICAL TURBINE WELL PUMP (WELL PUMP AND MOTOR TO BE SUPPLIED BY OWNER. CONTRACTOR SCOPE TO INCLUDE ADDITIONAL PIPING AND APPURTUNANCES AND INSTALLATION OF OWNER SUPPLIED EQUIPMENT FOR A COMPLETE PROJECT)	LS	1		
6	WELL HEAD PIPING (CONTRACTOR SCOPE TO INCLUDE PIPING, VALVES, CONCRETE PAD, AND INSTALLATION OF OWNER SUPPLIED EQUIPMENT FOR A COMPLETE PROJECT)	LS	1		
7	YARD PIPING (COMPLETE PER PLANS AND SPECIFICATIONS)	LS	1		
8	CHLORINATION SYSTEM (CHEMICAL METERING PUMP TO BE SUPPLIED BY CITY. CONTRACTOR SCOPE TO INCLUDE ADDITIONAL PIPING AND TUBING AND INSTALLATION OF CITY SUPPLIED METERING PUMP FOR A COMPLETE PROJECT)	LS	1		
9	ELECTRICAL I&C (PANEL, FIELD EQUIPMENT, AND SPARE PARTS TO BE SUPPLIED BY OWNER. CONTRACTOR SCOPE TO INCLUDE SITE CODUIT, WIRING, INSTALLATION OF OWNER SUPPLIED EQUIPMENT AND INSTRUMENTATION AND COORDINATING START UP FOR A COMPLETE PROJECT)	LS	1		
WELL PUMP ADDITION (ASHLEY WTP WELL NO. 2) SUBTOTAL					
PAYMENT AND PERFORMANCE BOND					
BID TOTAL					

Lump Sum Grand Total amounts are to be shown in both words and figures. In case of discrepancies, the amount in words will govern.

LUMP SUM GRAND TOTAL: \$ _____

WORDS: _____

THIS PROPOSAL DATED THIS _____ day of _____, 2022

ATTEST:

Witness: _____

Signature

Printed Name

By: _____

Authorized Signature (Principal)

Printed Name, Title

Company Name

Address:

Employee I.D. No.

Florida State Certified General
Contractor's License Number

Telephone Number: _____

END OF SECTION

SECTION 00302 – PUBLIC ENTITY CRIMES STATEMENT

NOTICE TO BIDDERS: This form must be properly completed, executed, and returned with the bid documents in order for your bid to be considered. Failure to do so will result in automatic disqualification.

SWORN STATEMENT UNDER SECTION 287133(3)(a), FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

(To be signed in the presence of a notary public or other officer authorized to administer oaths.)

STATE OF _____

COUNTY: _____

Before me, the undersigned authority, personally appeared _____

who, being by me first duty sworn, made the following statement:

1. The business address of _____ (name of bidder or contractor) is _____.

2. My relationship _____ (name of bidder or contractor) is _____ (relationship such as sole proprietor, partner, president, vice president).

3. I understand that a public entity crime as defined in Section 287.133 of the Florida Statutes includes a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity in Florida or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or such an agency or political subdivision and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.

4. I understand that “convicted” or “conviction” is defined by the statute to mean a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, nonjury trial, or entry of a plea of guilt or nolo contendere.

5. I understand that “affiliate” is defined by the statute to mean (1) a predecessor or successor of a person or a corporation convicted of a public entity crime, or (2) an entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime, or (3) those officer, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate, or (4) a person or corporation who knowingly entered into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months.

6. Neither the bidder or contractor nor any officer, director, executive, partner, shareholder, employee, member, or agent who is active in the management of the bidder or contractor nor any affiliate of the bidder or contractor has been convicted of a public entity crime subsequent to July 1, 1989.

(Draw a line through paragraph 6 if paragraph 7 below applies.)

7. There has been a conviction of a public entity crime by the bidder or contractor, or an officer, director, executive, partner, shareholder, employee, member or agent of the bidder or contractor who is active in the management of the bidder or contractor or an affiliate of the bidder or contractor. A determination has been made pursuant to Section 287.133(3) by order of the Division of Administrative Hearings that it is not in the public interest for the name of the convicted person or affiliate to appear on the convicted vendor list. The name of the convicted person or affiliate is _____.
A copy of the order of the Division of Administrative Hearings is attached to this statement.

(Draw a line through paragraph 7 if paragraph 6 above applies.)

Sworn to and subscribed before me in the state and county first mentioned above on the _____ day of _____, 2022.

(Signature of Notary Public)

(Affix Seal)

My commission expires: _____

END OF SECTION

SECTION 00303 – DRUG FREE WORKPLACE FORM

The undersigned vendor in accordance with the Florida Statute 287.087 hereby certifies that _____ does:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and the actions that will be taken against employees for violations of such prohibition.
2. Inform employees about dangers of drug abuse in the workplace, the business' 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 from drug abuse violations.
3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).
4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employees 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 1893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
5. Impose a sanction on or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is convicted.
6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

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

Bidder's Signature

Date

END OF SECTION

SECTION 00304 - IMMIGRATION AFFIDAVIT CERTIFICATION

This Affidavit is required and should be signed, notarized by an authorized principal of the firm, and submitted with formal Invitations to Bid (ITB's) and Request for Proposals (RFP) submittals. Further, Consultants / Bidders are required to enroll in the E-Verify program, and provide acceptable evidence of their enrollment, at the time of the submission of the Consultant's/bidder's proposal. Acceptable evidence consists of a copy of the properly completed E-Verify Company Profile page or a copy of the fully executed E-Verify Memorandum of Understanding for the company. Failure to include this Affidavit and acceptable evidence of enrollment in the E-Verify program may deem the Consultant / Bidder's proposal as nonresponsive.

The City of Wildwood will not intentionally award City contracts to any Consultant who knowingly employs unauthorized alien workers, constituting a violation of the employment provision contained in 8 U.S.C. Section 1324 a(e) Section 274A(e) of the Immigration and Nationality Act ("INA").

The City of Wildwood may consider the employment by any Consultant of unauthorized aliens a violation of Section 274A (e) of the INA. Such Violation by the recipient of the Employment Provisions contained in Section 274A (e) of the INA shall be grounds for unilateral termination of the contract by the City of Wildwood.

Consultant attests that they are fully compliant with all applicable immigration laws (specifically to the 1986 Immigration Act and subsequent Amendment(s)) and agrees to comply with the provisions of the Memorandum of Understanding with E-Verify and to provide proof of enrollment in The Employment Eligibility Verification System (E-Verify), operated by the Department of Homeland Security in partnership with the Social Security Administration at the time of submission of the Consultant's/Bidder's proposal.

Company Name: _____

Print Name: _____ Title: _____

Signature: _____ Date: _____

State of _____

County of _____

The foregoing instrument was signed and acknowledged before me this ____ day of _____, 2023, by _____ who ____ is personally known to me or ____ has produced _____ as identification by way of physical presence.

(Notary Signature)

(Affix Seal)

(Print or Type Name)

(Commission Expiration Date)

The signee of this affidavit guarantees, as evidenced by the affidavit required herein, the truth and accuracy of this affidavit to interrogatories hereinafter made.

END OF SECTION

SECTION 00500 – AGREEMENT

This Agreement made this _____ day of _____, 2023 by and between the City of Wildwood hereinafter called "Owner" and _____ doing business as a corporation hereinafter call "Contractor", for the construction of the Ashley Water Treatment Plant Well No. 2 Pump Addition.

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The Contractor will furnish all of the material, supplies, tools, equipment, labor and other services necessary for construction and completion of the work described in the Contract Documents and comply with the terms therein for the lump sum of \$ _____ or as shown in the Bid Schedule.
2. The Contractor will furnish a Performance and Payment Bond, in an amount equal to 100 percent (100%) of the Contract Price and submit such Bond to the Owner within ten (15) calendar days from the date of the Notice of Award.
3. The Contractor will purchase and maintain such comprehensive general liability and other insurance such as required by the General and Supplementary Conditions and furnish Certificates of Insurance to the Owner within ten (15) calendar days from the date of the Notice of Award.
4. The Contractor will commence the work required by the Contract Documents within ten (10) calendar days after the date of the Notice to Proceed and will achieve Substantial Completion (**operational**) within 90 calendar days of the Notice to Proceed. The date of Final Completion will be 30 calendar days following the date of Substantial Completion. Unless the period for Substantial Completion is extended otherwise by the Contract Documents, the Contractor will be assessed liquidated damages in the amount of \$1,000 per calendar day past the date of Substantial Completion. In addition, for Final Completion, the Contractor will be assessed liquidated damages in the amount of \$1,000 per calendar day past the date of Final Completion.
5. The Owner will pay to the Contractor in the manner and at such times as set forth in the General Conditions such amounts as required by the Contract Documents.
6. Progress payments will be made in an amount equal to 90% (ninety percent) of the value of work completed and may include 90% (ninety percent) of the value of materials and equipment not incorporated into the work, but delivered and suitably stored, less, in each case, the aggregate of payments previously made. At the sole discretion of the Owner, monthly progress payments may be increased after 50% (fifty percent) of the work is completed to 95% (ninety-five percent) of the value of work completed and materials and equipment not incorporated but delivered and suitably stored (less the aggregate of previous payments) provided that:
 - (a) Contractor is making satisfactory progress, and
 - (b) There is no specific cause for greater withholding.However, the Owner may subsequently resume retaining 10% (ten percent) of the value of work completed and materials delivered if, in sole determination of the Owner, the Contractor is not performing according to the Contract Documents or not complying with the current progress schedule.
7. The Contractor will provide the Owner with a list of all Sub-contractors and Suppliers used by the Contractor in performing the work covered by this Contract. The Contractor will be required to submit to the Owner appropriate partial Release of Lien from the appropriate Suppliers and Sub-contractors with each Application for Payment before payment is made by the Owner. Final payment will be paid to the Contractor when the Contractor and all Sub-contractors and Suppliers have provided the Owner with their final Release of Lien.
8. The term "Contract Documents" means and includes the following:
 - (a) Invitation For Bids
 - (b) Instruction to Bidders
 - (c) Bid Form

- (d) Bid Bond
- (e) Public Entity Crimes Statement
- (f) Drug Free Workplace Form
- (g) Agreement
- (h) Performance and Payment Bond
- (i) Certificate of Insurance
- (j) General Conditions
- (k) Supplementary Conditions
- (l) Special Provisions
- (m) Technical Specifications prepared or issued by Kimley-Horn and Associates, Inc. dated April 2023.
- (n) Drawings prepared by Kimley-Horn and Associates, Inc. dated April 2023
- (o) Addenda As Follows:

No. _____ dated _____, _____	No. _____ dated _____, _____
No. _____ dated _____, _____	No. _____ dated _____, _____
No. _____ dated _____, _____	No. _____ dated _____, _____

9. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.
10. The Contractor agrees that all materials, techniques, methods and safety are exclusively the responsibility of the Contractor and not the Engineer or Owner.
11. Contractor agrees to immediately notify Owner if Contractor is adjudged as bankrupt or insolvent or makes a general assignment for the benefit of its creditors, or if a trustee or receiver is appointed for the Contractor or for any of its property, or if Contractor files a petition or take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws.
12. The Contractor shall indemnify and save harmless the City of Wildwood its Engineer (Kimley-Horn and Associates, Inc.), officers, agents and employees from all suits, actions or claims of any character, name and description brought for, or on account of any injuries, deaths or damages received or sustained by any person, persons or property by or from the Contractor, his agents or employees, or by, or in consequence of, any neglect in safeguarding the work or through the use of unacceptable materials in the construction of the improvement, or by, or on account of, any act or omission, neglect, or misconduct of the Contractor, his agents or employees, or by, or on account of, any claims or amounts recovered for any infringement of patent, trademarks, or copyright or from any claims or amounts arising or recovered under the Workmen's Compensation Law or any other laws, by-laws, ordinances, order or other decree, and so much of the money due to Contractor under any virtue of his contract as shall be considered necessary to the Engineer, may be retained for use of the Owner, or in case of money is due, his Surety shall be held until such suit or lawsuits, action or actions, claim or claims, for injuries, deaths or damages, as aforesaid, shall have been settled and suitable evidence to that effect furnished to the Owner. The Contractor agrees to furnish insurance coverage in the type and amounts stipulated by the Specifications and Contract Documents.
13. The breach of any provision of this contract and those provisions stated more fully in the specifications for Ashley Water Treatment Plant Well No. 2 Pump Addition, dated April 2023 shall entitle Owner to collect damages against Contractor and if necessary, to seek injunctive relief against Contractor, and to collect costs and attorney's fees through all appeals.

IN WITNESS WHEREOF, the parties thereto have executed, or caused to be executed by their duly authorized officials, this Agreement in triplicate each of which shall be deemed an original on the date first above written.

OWNER: City of Wildwood

BY: _____

NAME: _____
(Please Type/Print)

TITLE: _____

DATE: _____

ATTEST:

(Signature)

(Name: Please Type/Print)

(Title)

CONTRACTOR: _____

BY: _____

NAME: _____
(Please Type/Print)

ADDRESS: _____

DATE: _____

ATTEST:

(Signature)

(Name: Please Type/Print)

(Title)

END OF SECTION

SECTION 00622 – APPLICATION FOR PAYMENT NO.

To: _____

Contract for: _____

For Work Accomplished through the date of: _____

ITEM			CONTRACTOR'S Schedule of Values			Work Completed	
			Unit Price	Quantity	Amount	Quantity	Amount
See attached schedule of items.							
C.O. No.	Total	\$			\$		\$
C.O. No.		\$					

Accompanying Documentation:	GROSS AMOUNT DUE	\$	_____
Schedule of Items	LESS 10% RETAINAGE	\$	_____
_____	AMOUNT DUE TO DATE	\$	_____
_____	LESS PREVIOUS PAYMENTS	\$	_____
_____	AMOUNT DUE THIS APPLICATIC	\$	_____

CONTRACTOR'S Certification:

The undersigned CONTRACTOR certifies that (1) all previous progress payments received from OWNER an account of Work done under the Contract referred to above have been applied to discharge in full all obligations of CONTRACTOR incurred in connection with Work covered by prior Applications for Payment numbered 1 through _____ inclusive; and (2) title to all materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to OWNER at time of payment free and clear of all liens, claims, security interests and encumbrances (except such as covered by Bond acceptable to OWNER).

Dated: _____

CONTRACTOR

By: _____

Payment of the above AMOUNT DUE THIS APPLICATION is recommended.

ENGINEER

Date: _____

By: _____

END OF SECTION

SECTION 00625 – CERTIFICATE OF SUBSTANTIAL COMPLETION

Project: Ashley Water Treatment Plant Well No. 2 Pump Addition

Owner: City of Wildwood

Owner's Contract No.: -

Contract: Ashley Water Treatment Plant

Engineer's Project No.: 142173353

This [tentative] [definitive] Certificate of Substantial Completion applies to:

All Work under the Contract Documents: The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [definitive] list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

Amended Responsibilities Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

The following documents are attached to and made part of this Certificate:

SECTION 00630 – PERFORMANCE AND PAYMENT BOND

The successful Bidder, simultaneously with the execution of the Agreement, shall furnish a Performance and Payment Bond in an amount equal to 100 percent (100%) of the Contract Price. The Bond shall be secured from a Surety Company listed on the Treasury Department's most current list and acceptable to the Owner.

Performance and Payment Bonds may be submitted on a standard form used by the Bidder's Surety Company. The Owner reserves the right to accept or reject the style and content of the Performance Bond Form submitted by the Bidder.

Performance and Payment Bonds shall be submitted with the executed Agreement.

END OF SECTION

SECTION 00650 – CERTIFICATE OF INSURANCE

A. INSURANCE REQUIREMENTS

- 1) Contractor shall purchase and maintain such comprehensive general liability and other insurance as required by the General Conditions.
- 2) The limits of liability for the insurance required by the General Conditions shall provide coverage for not less than the following amounts or greater where required by law:
 - a. General Liability
 - Bodily Injury:
 - \$500,000 each occurrence
 - \$500,000 aggregate
 - Property Damage:
 - \$200,000 each occurrence
 - \$200,000 aggregate
 - Personal and Advertising Injury (per person/organization):
 - \$200,000 each occurrence
 - \$200,000 aggregate
 - Products – Completed Operations Aggregate:
 - \$200,000 aggregate
 - b. Automobile Liability
 - Bodily Injury:
 - \$300,000 each person
 - \$300,000 each occurrence
 - Property Damage:
 - \$300,000 each occurrence
 - c. Excess Liability
 - Bodily Injury & Property Damage Combined
 - \$-0- each occurrence
 - \$-0- aggregate
 - d. Worker’s Compensation
 - In Accordance with State and Federal Statutory Limits
 - \$200,000 employer’s liability
 - e. Contractual Liability
 - \$1,000,000 each occurrence (bodily injury and property damage)
 - \$1,000,000 general aggregate
 - f. Property Insurance
 - Property Insurance to the full value of completed work. Property insurance will be

subject to a maximum of \$500.00 deductible. Deductible for any claim shall be paid by Contractor at no expense to Owner.

B. CERTIFICATE OF INSURANCE FORM

- 1) The Certificate of Insurance submitted to the Owner shall be on the Insurance Company's form with a format similar to the popular ACORD Corporation form.
- 2) The Owner shall be shown as the Certificate Holder.
- 3) The Owners project name and work order number shall be shown on the Certificate.
- 4) The Certificate shall be submitted in triplicate along with the executed Contract Agreement and Performance and Payment Bonds.

END OF SECTION

**STANDARD GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT**

Prepared by



Issued and Published Jointly by



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**STANDARD GENERAL CONDITIONS OF THE
CONSTRUCTION CONTRACT**

TABLE OF CONTENTS

	Page
Article 1 – Definitions and Terminology	1
1.01 Defined Terms	1
1.02 Terminology.....	4
Article 2 – Preliminary Matters	5
2.01 Delivery of Bonds and Evidence of Insurance	5
2.02 Copies of Documents	6
2.03 Before Starting Construction	6
2.04 Preconstruction Conference; Designation of Authorized Representatives	6
2.05 Initial Acceptance of Schedules	6
2.06 Electronic Transmittals	7
Article 3 – Documents: Intent, Requirements, Reuse	7
3.01 Intent.....	7
3.02 Reference Standards	7
3.03 Reporting and Resolving Discrepancies	8
3.04 Requirements of the Contract Documents	8
3.05 Reuse of Documents.....	9
Article 4 – Commencement and Progress of the Work.....	9
4.01 Commencement of Contract Times; Notice to Proceed.....	9
4.02 Starting the Work.....	9
4.03 Reference Points	9
4.04 Progress Schedule	9
4.05 Delays in Contractor’s Progress.....	10
Article 5 – Availability of Lands; Subsurface and Physical Conditions; Hazardous Environmental Conditions	11
5.01 Availability of Lands.....	11
5.02 Use of Site and Other Areas	11
5.03 Subsurface and Physical Conditions.....	12
5.04 Differing Subsurface or Physical Conditions	12
5.05 Underground Facilities	13
5.06 Hazardous Environmental Conditions at Site.....	15
Article 6 – Bonds and Insurance	17

6.01	Performance, Payment, and Other Bonds	17
6.02	Insurance—General Provisions	17
6.03	Contractor’s Insurance	18
6.04	Owner’s Liability Insurance	20
6.05	Property Insurance	20
6.06	Waiver of Rights	22
6.07	Receipt and Application of Property Insurance Proceeds.....	23
Article 7 – Contractor’s Responsibilities		23
7.01	Supervision and Superintendence	23
7.02	Labor; Working Hours	23
7.03	Services, Materials, and Equipment.....	23
7.04	“Or Equals”	24
7.05	Substitutes.....	25
7.06	Concerning Subcontractors, Suppliers, and Others.....	26
7.07	Patent Fees and Royalties	27
7.08	Permits	28
7.09	Taxes.....	28
7.10	Laws and Regulations	28
7.11	Record Documents.....	29
7.12	Safety and Protection	29
7.13	Safety Representative	30
7.14	Hazard Communication Programs	30
7.15	Emergencies	30
7.16	Shop Drawings, Samples, and Other Submittals.....	30
7.17	Contractor’s General Warranty and Guarantee	32
7.18	Indemnification	33
7.19	Delegation of Professional Design Services	33
Article 8 – Other Work at the Site		34
8.01	Other Work	34
8.02	Coordination	34
8.03	Legal Relationships	35
Article 9 – Owner’s Responsibilities		35
9.01	Communications to Contractor.....	35
9.02	Replacement of Engineer.....	36
9.03	Furnish Data.....	36

9.04	Pay When Due	36
9.05	Lands and Easements; Reports, Tests, and Drawings	36
9.06	Insurance.....	36
9.07	Change Orders.....	36
9.08	Inspections, Tests, and Approvals	36
9.09	Limitations on Owner’s Responsibilities	36
9.10	Undisclosed Hazardous Environmental Condition	36
9.11	Evidence of Financial Arrangements	36
9.12	Safety Programs.....	36
Article 10 – Engineer’s Status During Construction		37
10.01	Owner’s Representative	37
10.02	Visits to Site.....	37
10.03	Project Representative	37
10.04	Rejecting Defective Work	37
10.05	Shop Drawings, Change Orders and Payments	37
10.06	Determinations for Unit Price Work.....	37
10.07	Decisions on Requirements of Contract Documents and Acceptability of Work	38
10.08	Limitations on Engineer’s Authority and Responsibilities.....	38
10.09	Compliance with Safety Program	38
Article 11 – Amending the Contract Documents; Changes in the Work		38
11.01	Amending and Supplementing Contract Documents	38
11.02	Owner-Authorized Changes in the Work.....	39
11.03	Unauthorized Changes in the Work	39
11.04	Change of Contract Price	39
11.05	Change of Contract Times	40
11.06	Change Proposals.....	40
11.07	Execution of Change Orders	41
11.08	Notification to Surety	42
Article 12 – Claims		42
12.01	Claims.....	42
Article 13 – Cost of the Work; Allowances; Unit Price Work.....		43
13.01	Cost of the Work.....	43
13.02	Allowances	45
13.03	Unit Price Work	45
Article 14 – Tests and Inspections; Correction, Removal or Acceptance of Defective Work		46

14.01	Access to Work	46
14.02	Tests, Inspections, and Approvals	46
14.03	Defective Work	47
14.04	Acceptance of Defective Work	47
14.05	Uncovering Work	48
14.06	Owner May Stop the Work	48
14.07	Owner May Correct Defective Work.....	48
Article 15 – Payments to Contractor; Set-Offs; Completion; Correction Period		49
15.01	Progress Payments	49
15.02	Contractor’s Warranty of Title	51
15.03	Substantial Completion	52
15.04	Partial Use or Occupancy.....	52
15.05	Final Inspection	53
15.06	Final Payment	53
15.07	Waiver of Claims	54
15.08	Correction Period	54
Article 16 – Suspension of Work and Termination.....		55
16.01	Owner May Suspend Work	55
16.02	Owner May Terminate for Cause	55
16.03	Owner May Terminate For Convenience	56
16.04	Contractor May Stop Work or Terminate	56
Article 17 – Final Resolution of Disputes		57
17.01	Methods and Procedures	57
Article 18 – Miscellaneous		57
18.01	Giving Notice	57
18.02	Computation of Times	57
18.03	Cumulative Remedies	57
18.04	Limitation of Damages.....	58
18.05	No Waiver.....	58
18.06	Survival of Obligations.....	58
18.07	Controlling Law.....	58
18.08	Headings	58

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. 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, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 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. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document 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, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.
 11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and

Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Engineer*—The individual or entity named as such in the Agreement.
21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.
27. *Notice to Proceed*—A written notice 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.

28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
29. *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.
30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.
33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.
35. *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.
36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
37. *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, and such other lands furnished by Owner which are designated for the use of Contractor.
38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
39. *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.
40. *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.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.

42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *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 a Subcontractor.
44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *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 but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *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; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in the following paragraphs 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 the 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 Article 10 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 15.03 or 15.04).
- 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. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.
- 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. *Bonds*: 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 Contractor’s Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner’s Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 - 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.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- 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 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, 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 and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *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 2.03.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 the component parts of the Work.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, 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.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

- A. Standards Specifications, Codes, Laws and Regulations
 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, 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, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract 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, reference standard, 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 part of the Contract Documents prepared by or for Engineer. 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 part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or 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) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then 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 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
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 part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); 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 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers 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 its consultants, including electronic media editions, or 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; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- 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.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *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 Contract 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 Contract. 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 Contract, whichever date is earlier.

4.02 *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 such date.

4.03 *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.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 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 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.
- B. 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, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, 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 Times and Contract Price. 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.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. 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. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 2. abnormal weather conditions;
 3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
 4. acts of war or terrorism.
- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.
- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.
- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *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.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

- 1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 - 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, 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 any such claim, and against all 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 directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent 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 and adjacent areas 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 of 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 structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings*: The Supplementary Conditions identify:
1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
 3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on 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.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site 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 5.03 is materially inaccurate; or
 2. is of such a nature as to require a change in the Drawings or Specifications; 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 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition

categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, 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 fall within any one or more of the categories described in Paragraph 5.04.A;
 - 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 Paragraph 13.03; and,
 - c. 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.
 2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a 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 otherwise; or
 - b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 5.04.A.
 3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
 4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent 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 do not warrant or guarantee 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 information and data regarding existing Underground Facilities at the Site;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
 - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then 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 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.
- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
 - 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 Paragraph 13.03;

- c. 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; and
 - d. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
 2. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on 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 removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) 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 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. 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, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
- H. 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, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, 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, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. 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 failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, 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. 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 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond 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 the accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then 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 bond and surety requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, 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.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

- A. *Workers' Compensation:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
 - 2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
 - 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).
 - 4. Foreign voluntary worker compensation (if applicable).
- B. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
 - 1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
 - 2. claims for damages insured by reasonably available personal injury liability coverage.

3. 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.
- C. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage:
 - a. Such insurance shall be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
 2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 3. Broad form property damage coverage.
 4. Severability of interest.
 5. Underground, explosion, and collapse coverage.
 6. Personal injury coverage.
 7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
 8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- D. *Automobile liability:* Contractor shall purchase and maintain automobile liability insurance against 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. The automobile liability policy shall be written on an occurrence basis.
- E. *Umbrella or excess liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
- F. *Contractor's pollution liability insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.
- G. *Additional insureds:* The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; 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 (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *Contractor's professional liability insurance:* If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or

otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

- I. *General provisions:* The policies of insurance required by this Paragraph 6.03 shall:
1. include at least the specific coverages provided in this Article.
 2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
 3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
 4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
 5. be appropriate for the Work being performed and provide protection from claims that 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.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, 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.
- B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

- A. *Builder's Risk:* Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."

2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.
 3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
 4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
 5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
 6. extend to cover damage or loss to insured property while in transit.
 7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
 8. allow for the waiver of the insurer's subrogation rights, as set forth below.
 9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
 10. not include a co-insurance clause.
 11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
 12. include performance/hot testing and start-up.
 13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.

- C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective 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, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, 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 builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *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.
- 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.

7.02 *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, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *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, whether or not such items are specifically called for in the Contract Documents.

- B. All materials and equipment incorporated into the Work 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.

7.04 "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 Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item 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 is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that 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, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, 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;
 - 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;
 - 3) it has a proven record of performance and availability of responsive service; and
 - 4) it is not objectionable to Owner.
 - 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.
- B. *Contractor's Expense:* Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

- D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
 - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
 - 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
 - 3. 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:
 - a. shall certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design,
 - 2) be similar in substance to that specified, and
 - 3) be suited to the same use as that specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
 - 2) 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
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from that specified, and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in

Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. 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.
- E. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 Concerning Subcontractors, Suppliers, and Others

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.
- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive,

reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. 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 the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. 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.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. 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.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.
- O. 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 create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *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, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors 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 specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. 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.

7.08 *Permits*

- A. Unless otherwise provided in the Contract Documents, 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 the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *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.

7.10 *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 or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and 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 such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if

any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

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

7.12 *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 or 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, other work in progress, 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 Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any 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 program 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 7.12.A.2 or 7.12.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 at its expense (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 protection 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 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

- G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *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.

7.14 *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.

7.15 *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.

7.16 *Shop Drawings, Samples, and Other Submittals*

- A. *Shop Drawing and Sample Submittal Requirements:*

1. Before submitting a Shop Drawing or Sample, Contractor shall have:

- a. reviewed and coordinated the 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 and equipment offered with respect to the indicated application, 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 of that submittal, and that Contractor approves the 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 set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - 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 7.16.D.
 2. *Samples:*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall 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 7.16.D.
 3. 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. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- 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 or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample 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 7.16.A.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 will document any such approved variation from the requirements of the Contract Documents in a Field Order.
 5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
 6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
 7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

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.
2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *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. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on 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;
 6. the issuance of a notice of acceptability by Engineer;
 7. any inspection, test, or approval by others; or
 8. any correction of defective Work by Owner.
- D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, 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 is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent 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.
- 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 7.18.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 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *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 Laws and Regulations.
- 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, 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, 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 7.16.D.1.

- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. 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, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, 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.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. an itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. the extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. 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.
- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.
- C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.
- D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) 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 any such claims, and against all 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 damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

- 9.02 *Replacement of Engineer*
- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.
- 9.03 *Furnish Data*
- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.
- 9.04 *Pay When Due*
- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.
- 9.05 *Lands and Easements; Reports, Tests, and Drawings*
- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
- 9.06 *Insurance*
- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.
- 9.07 *Change Orders*
- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.
- 9.08 *Inspections, Tests, and Approvals*
- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.
- 9.09 *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.
- 9.10 *Undisclosed Hazardous Environmental Condition*
- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.
- 9.11 *Evidence of Financial Arrangements*
- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).
- 9.12 *Safety Programs*
- A. While at 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.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER’S STATUS DURING CONSTRUCTION

10.01 *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.

10.02 *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 10.08. Particularly, but without limitation, during or as a result of Engineer’s visits or observations of Contractor’s Work, 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.

10.03 *Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. 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.

10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer’s authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer’s authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer’s authority as to Change Orders is set forth in Article 11.
- D. Engineer’s authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, 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 15.06.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 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
 - 1. *Change Orders:*
 - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
 - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other

engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. *Work Change Directives:* A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.
3. *Field Orders:* Engineer may authorize minor changes in the Work if the changes 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. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-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. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *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, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.
- B. 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, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).
- C. *Contractor's Fee*: When applicable, 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 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 13.01.B.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 Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - 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 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or

Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
 2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
 3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 Execution of Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders covering:
1. 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;
 2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and
 4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *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.

ARTICLE 12 – CLAIMS

12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
 - 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 - 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
 - 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.
 - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval:* If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim:* If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time

thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

- G. *Final and Binding Results:* If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work:* The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
 2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work 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 13.01.C, 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, and 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 13.01.

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, as 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 6.05), 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 communication 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 that Contractor is required by the Contract Documents to purchase and maintain.
- C. *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 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here 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 Paragraph 13.01.B.
- D. *Contractor's Fee*: When the Work as a whole 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, Change Proposal, Claim, set-off, or other 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 11.04.C.
- E. *Documentation*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, 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.

13.02 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*: Contractor agrees that:
1. 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
 2. 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*: 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.

13.03 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. Payments to Contractor for Unit Price Work will be based on actual quantities.
- 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. 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 the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price 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;
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that it 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 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 Access to Work

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction 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 safety procedures and programs so that they may comply therewith as applicable.

14.02 Tests, Inspections, and Approvals

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.
- 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, obtaining, and paying for all inspections and tests required:
 - 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 - 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 - 3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. 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. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages 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. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may

impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then 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, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages 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 pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. 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, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *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, then 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.

14.07 *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, 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, then 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 14.07, 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, 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 incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-

offs against payments due under Article 15. 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 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 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 during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *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, a warehouse bond, 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 Agreement.
- C. *Review of Applications:*
1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, 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, the results of any subsequent tests called for in the

Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and 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; 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 money 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 15.01.C.2.
 6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due:*

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

E. *Reductions in Payment by Owner.*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
 - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. the Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. the Contract Price has been reduced by Change Orders;
 - i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
 - j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. 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;
 - l. there are other items entitling Owner to a set off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, 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, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
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 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects,

and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *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 and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- 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 preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. 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 punch list.

15.04 *Partial Use or Occupancy*

- 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. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be 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 15.03.A through E for that part of the Work.

2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work 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 15.03 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 6.05 regarding builder's risk or other property insurance.

15.05 *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, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *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, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
 - d. a list of all disputes that Contractor believes are unsettled; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.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, or Owner

at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

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 have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. 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 15.07. 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. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due:* Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *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 Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;
2. correct such defective Work;
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 to 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. 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 repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- 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, 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 are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *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 written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and 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);
 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:
 1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
 2. enforce the rights available to Owner under any applicable performance bond.

- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, 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 complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.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 the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds 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.
- F. 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, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *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; and
 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) 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 16.03.

- 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 are not intended to preclude Contractor from submitting a Change Proposal 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 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this Article:
 - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and
 - 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this Article, Owner or Contractor may:
 - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or
 - 2. agree with the other party to submit the dispute to another dispute resolution process; or
 - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *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, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract 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.

18.03 *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. 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.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Headings*

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

SECTION 00800 – SUPPLEMENTAL CONDITIONS

These Supplemental Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC C-700 (2013 Edition). All provisions which are not so amended or supplemented remain in full force and effect.

The terms used in these Supplemental Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplemental Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplemental Conditions is the same as the address system used in the General Conditions, with the prefix “SC” added thereto.

SC-2 PRELIMINARY MATTERS

SC-2.01 Add the following new paragraph immediately after Paragraph 2.01.A as 2.01.A.1:

Contractor shall record all required bonds, at the contractor’s expense, in the public records of Sumter County, Florida and shall provide certified copies of said bonds along with the executed agreement to the Owner within ten (15) calendar days of the Notice of Intent to Award.

SC-2.02 Delete Paragraph 2.02.A in its entirety and insert the following in its place:

Owner shall furnish to Contractor up to three (3) printed or hard copies of the Drawings and Project Manual and one set in electronic format. Additional copies will be furnished upon request at the cost of reproduction.

SC-5 AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.03 Add the following new paragraphs immediately after Paragraph 5.03.B:

The following reports of explorations and tests of subsurface conditions at or adjacent to the Site are known to Owner:

1. Report dated October 7, 2016 entitled Proposed Force Main and Tank Storage, County Road 209, Wildwood, Florida, as prepared by Geo-Tech, Inc.

SC 5.06 Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.
- B. Not Used.

SC-6 BONDS AND INSURANCE

SC 6.01 Delete Paragraphs 6.01.A in their entirety and insert the following:

- A. Contractor shall furnish a performance and payment bond 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. The bond 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 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also

furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.

SC-6.03 Add the following new paragraph immediately after Paragraph 6.03.J:

- A. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall be as specified in Document 00650 – Minimum Insurance Requirements, or greater where required by Laws and Regulations.

SC-7 CONTRACTOR'S RESPONSIBILITIES

SC-7.02.B Amend the first and second sentences of Paragraph 7.02.B to state "...all Work at the Site shall be performed during regular working hours, Monday through Saturday, except where not allowed by CSX, FDOT or Sumter County for portions of work within their control. Contractor will not perform Work on a Sunday or any legal holiday."

SC-7.06 Add the following new paragraph immediately after Paragraph 7.06.O as 7.06.P:

The General Contractor shall be required to perform, at a minimum, 51% of the contract amount of this project.

SC-7.17 Add the following new paragraphs immediately after Paragraph 7.17.E:

- F. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing subsequent submittals of Shop Drawings, samples, or other items requiring approval and Contractor shall reimburse Owner for Engineer's charges for such time.
- G. In the event that Contractor requests a change of a previously approved item, Contractor shall reimburse Owner for Engineer's charges for its review time unless the need for such change is beyond the control of Contractor.

SC-10 ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.A:

- B. The Resident Project Representative (RPR) will be Engineer's employee or agent at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions. RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall be through or with the full knowledge and approval of Contractor. The RPR shall:
 - 1. *Schedules*: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and schedule of values prepared by Contractor and consult with Engineer concerning acceptability.
 - 2. *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.
 - 3. *Liaison*:
 - a. Serve as Engineer's liaison with Contractor, working principally through Contractor's authorized representative, assist in providing information regarding the intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

- c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
- 4. *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.
- 5. *Shop Drawings and Samples:*
 - a. Record date of receipt of Samples and approved Shop Drawings.
 - b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.
- 6. *Modifications:* Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.
- 7. *Review of Work and Rejection of Defective Work:*
 - a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress will not produce a completed Project that conforms generally to the Contract Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in 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 that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
- 8. *Inspections, Tests, and System Startups:*
 - a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.
 - b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.
- 9. *Records:*
 - a. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
 - b. Maintain records for use in preparing Project documentation.
- 10. *Reports:*
 - a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the progress schedule and schedule of Shop

Drawing and Sample submittals.

- b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
- c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, and acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Hazardous Environmental Condition.

11. *Payment Requests:* Review Applications for Payment with Contractor for compliance with the established procedure for their submission and forward with 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.

12. *Certificates, Operation and Maintenance Manuals:* During the course of the Work, verify that materials and equipment certificates, operation and maintenance 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 these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

13. *Completion:*

- a. Participate in a Substantial Completion inspection, assist in the determination of Substantial Completion and the preparation of lists of items to be completed or corrected.
- b. Participate in a final inspection in the company of Engineer, Owner, and Contractor and prepare a final list of items to be completed and deficiencies to be remedied.
- c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the Notice of Acceptability of the Work.

C. The RPR shall not:

- 1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
- 2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.
- 3. Undertake any of the responsibilities of Contractor, Subcontractors, Suppliers, or Contractor's superintendent.
- 4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work unless such advice or directions are specifically required by the Contract Documents.
- 5. Advise on, issue directions regarding, or assume control over safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
- 6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.
8. Authorize Owner to occupy the Project in whole or in part.

SC-15 PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC-15.01 Delete Paragraph 15.01.B.1 in its entirety and replace with the following:

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.

SC 15.03.B Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, shall be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

SC-17 FINAL RESOLUTION OF DISPUTES

SC-17.01 Delete Paragraphs 17.01.A and 17.01.B in their entirety and replace with the following:

- A. All claims, disputes and other matters in question between Owner and Contractor arising out of or relating to the contract Documents or the breach thereof (except for claims which have been waived by the making or acceptance of final payment) will be decided by proper legal procedures to be heard in the Circuit Court of Sumter County, Florida.
- B. No filing of suite or commencement of legal procedures of any claim, dispute or other matter that is required to be referred to Engineer initially for decision will be made until the earlier of (a) the date on which Engineer has rendered a written decision or (b) the thirty-first day after the parties have presented their evidence to the Engineer if a written decision has not been rendered by Engineer before that date. No commencement of legal proceedings for any such claim, dispute or other matter will be made later than thirty days after the date on which the Engineer has rendered a written decision in respect thereof; and the failure to commence legal proceedings within said thirty days period will result in the Engineer's decision being final and binding upon Owner and Contractor. If Engineer renders a decision after legal proceedings have been initiated, such decision may be entered as evidence but will not supersede the legal proceedings, except where the decision is acceptable to the parties concerned. No commencement of legal proceedings of any written decision of Engineer rendered will be made later than ten days after the party initiating such procedures has delivered written notice of intention to appeal as provided in paragraph GC 9.09.

END OF SECTION

SECTION 00801 – SPECIAL PROVISIONS

PART 1 - GENERAL

The Special Provisions of these specifications are intended as modifications or supplements to Information for Bidders; General Conditions; or Technical Specifications, with the intent that any provisions of this section shall govern. If at any time the plans or specifications for this project are unclear, the CONTRACTOR shall contact the Engineer immediately. For those situations where details are not included in the plans or miscellaneous work arises during the project which is not covered by the plans or specification for this project, the Construction shall be performed in accordance with *FDOT Standard Specifications for Road and Bridge Construction* and *FDOT Roadway and Traffic Design Standards (Latest edition)*.

1.01 CONSTRUCTION LAYOUT SURVEY

- A. Base lines and benchmarks shall be established by the CONTRACTOR's surveyor for the CONTRACTOR's use. The CONTRACTOR will be responsible for performing all survey required for accurate layout of the proposed work.

1.02 AS-BUILT SURVEY

- A. The CONTRACTOR shall provide surveyed as-built plans, prepared, and certified by a professional land surveyor, documenting the actual constructed condition of all paving, grading, drainage and underground utility construction in accordance with Section 01720 "Project Record Drawings".

1.03 CLEARING AND GRUBBING

- A. The Work includes clearing and grubbing all right of way areas and easements shown on the contract documents.
- B. The CONTRACTOR shall not trespass onto private property outside of the right-of-way and easements without the written permission of the individual property owner. The CONTRACTOR shall be solely responsible for any claims that may arise out of damage to private property resulting from trespass onto private property. The CONTRACTOR shall promptly settle all such claims without delay. The written permission of the private property's owner shall be available for inspection by the Engineer or the Owner upon request.
- C. All damage to driveways, mailboxes and other improvements will be repaired at the CONTRACTOR'S expense. Roadway shall be swept clean as part to of this pay item. Any blading of grass or edge preparation required for the work will be included in this item. This item shall also include any tree trimming and/or clearing & grubbing necessary to complete the work.

1.04 POLLUTION PREVENTION AND CONTROL

- A. The CONTRACTOR is responsible for maintaining full and complete erosion control throughout the project until all work is complete and accepted by City of Wildwood. Erosion control is a performance-based criteria, and the measures needed depend on the CONTRACTOR's sequence of work, cleanliness and organization of the sites, and weather conditions during the work. The CONTRACTOR shall provide all necessary erosion control measures to prevent any violations as described in the Florida Department of Environmental Protection Generic Permit for Stormwater Discharges from Large and Small Construction Activities, latest revision.
- B. Under this item the CONTRACTOR is responsible for filing a Notice of Intent to Use the Generic Permit for Stormwater Discharge from Large and Small Construction Activities with the FDEP and following all permit requirements.

1.05 UTILITY COORDINATION

- A. The CONTRACTOR shall provide coordination with the various utility companies that exist

with the project limits to ensure that all utility relocation work is coordinated fully with the proposed roadway construction. The CONTRACTOR shall verify the location of existing underground facilities prior to any excavation.

- B. This specifically includes all planning, coordination, adjustments, notifications, etc. that are necessary to ensure that all work concerning utility relocations are coordinated by the CONTRACTOR in a complete and seamless manner.

1.06 MAINTENANCE OF TRAFFIC

- A. The contractor shall be responsible, during the course of construction, for proper maintenance control, and detour of traffic in the area of construction. Traffic control and Maintenance shall be in conformance with the Manual of Traffic Control and the FDOT Standard Index (600 Series). The Public shall, at all times, be protected by barricades, flashers, flagmen, and other safety devices as needed. All safety precautions shall be taken and all traffic controls shall be furnished, satisfactory to County, Department of Transportation, and/or any other governmental agency having jurisdiction, where partial or complete obstruction of streets is required for the performance of the work. The CONTRACTOR shall maintain positive drainage for all active travel lanes at all times. The cost of any temporary drainage facilities required are to be included in this bid item. All temporary striping and the removal of any conflicting striping, as well as adjustment of the existing traffic signals to accommodate the Maintenance of Traffic plan are to be included in this bid item.
- B. The CONTRACTOR shall prepare a Maintenance of Traffic plan for approval by the Engineer and Owner prior to initiating any work. Detours shall be submitted by the CONTRACTOR for review by the Owner. No road closures are permitted without the Owner's authorization. It shall be the CONTRACTOR's responsibility, as Bidder, prior to submitting his Bid, to determine the requirements of these agencies so that his Proposal reflects all costs to be incurred. No claims for additional payment shall be considered for costs incurred due to the proper maintenance, control, detour, signing, striping, and protection of traffic.

1.07 PRIVATE PROPERTY PROTECTION

- A. The CONTRACTOR shall not trespass onto private property outside of the right-of-way and easements without the written permission of the individual property owner. The CONTRACTOR shall be solely responsible for any claims that may arise out of damage to private property resulting from trespass onto private property. The CONTRACTOR shall promptly settle all such claims without delay. The written permission of the private property's owner shall be available for inspection by the Engineer or the Owner upon request.

1.08 INSPECTION AND TESTING

- A. GENERAL – The Project Engineer or representative inspector under the Engineer's direct supervision shall provide construction observation as the Owner's representative in accordance with Section 00800, Supplemental Conditions.
- B. TESTING – 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. The testing results shall be provided directly to the OWNER's representative throughout the performance of the Work. The CONTRACTOR shall be responsible for the costs of any retesting of failing components as identified by the independent testing laboratory.
- C. Material sampling and testing shall be in accordance with the FDOT Standard Specifications for Road and Bridge Construction, 2010 edition, unless otherwise noted.
- D. INSPECTIONS – Construction inspections will periodically be conducted by the Project Engineer or an authorized representative. The CONTRACTOR shall complete each

specified item of work listed below which pertains to the project and notify the project engineer or his representative at least forty-eight (48) hours in advance of a request for inspection. The CONTRACTOR's project superintendent shall be present at all inspections and upon request by the inspector, furnish construction equipment to aid in the inspection.

- E. The following are mandatory inspections which shall be conducted when the item of work applies to the subject project.
 - 1) Underground Utilities – The CONTRACTOR shall request inspection of all newly constructed water and sewer lines prior to backfill.
 - 2) Substantial Completion Inspection – When all construction is completed. The CONTRACTOR, Inspector and Engineer shall prepare a punch list indicating any unfinished items at this time.
 - 3) Final Inspection – Final inspection will be conducted following the correction of the punch list items.
- F. All inspections shall be conducted and approved by the Project Engineer or his representative prior to approval of the payment request for the item of work.
- G. 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.

1.09 LEGAL REQUIREMENTS

- A. The CONTRACTOR's attention is directed to the safety regulations promulgated by the State of Florida, Department of Commerce and to the provisions of Chapter 403, Florida Statutes, regarding control of air and water pollution as well as the Rules and Regulations of the Department of Environmental Regulation.
- B. The CONTRACTOR shall be responsible for obtaining all permits and obeying all Federal, State, County and City laws, by-laws, ordinances, resolutions, and regulations which pertain to his work.
- C. The CONTRACTOR shall take care to strictly observe all applicable OSHA, State, Local or other Federal Standards with respect to the safety of persons during construction.

1.10 PUBLIC CONVENIENCE AND SAFETY

- A. No street or roadway shall be closed, except when and where directed by the Engineer or County Inspector. The work shall be conducted so that there shall, at all items, be a safe passageway for traffic, whenever the street or roadway is not closed. The CONTRACTOR shall provide and maintain a passable driveway, as directed by the Engineer, whenever it is necessary to divert traffic from any part of the street or roadway actually under construction. Driveways must be accessible at all times, in case of an emergency, and must be left in a usable condition at the end of each day.
- B. The CONTRACTOR shall provide, erect, and maintain all necessary barricades, suitable and sufficient red lights, danger signals and signs, provide a sufficient number of watchmen, and take all necessary precautions for the protection of the work and safety of the public. Streets or highways, which are closed to traffic, shall be protected by effective barricades on which acceptable warning signs shall be placed. The CONTRACTOR shall provide and maintain detour signs at all closures and intersections along the detour route(s) to direct the traffic around the closed portion(s) of the work. All temporary detour route(s) shall be clearly indicated throughout their entire length. All barricades and obstructions shall be illuminated at night. All lights shall be kept burning from sunset to sunrise. All barricades shall be well built and designed so as not to be blown over by the wind.
- C. Allowable work hours for this project are from 7:00AM to 7:00PM, Monday – Saturday. No work may be performed on Sundays or major recognized holidays. Night work may be required for certain operations, but only with approval from the Engineer and Owner.

1.11 MAINTENANCE AND PROTECTION OF WORK

- A. The CONTRACTOR shall maintain all earthwork construction throughout the life of the contract, unless otherwise provided, and shall take all reasonable precautions to prevent loss of material from the roadway due to the action of wind or water. He shall repair, at his expense, except as otherwise provided herein, any slides, washouts, settlement, subsidence, or other mishap which may occur prior to final acceptance of the work.
- B. All channels excavated as a part of the contract work shall be maintained against natural shoaling or other encroachments to the lines, grades, and cross sections shown in the plans, until final acceptance of the project.

1.12 ROADWAY WORK

- A. All work including but not limited to asphaltic friction course, asphaltic structural course, asphaltic leveling course, asphaltic base course, roadway markings, and maintenance of traffic shall be performed in accordance with the FDOT Standards for Road and Bridge Construction (latest edition), FDOT Design Standards Booklet (latest edition), City of Wildwood Land Development Regulations and the Sumter County Land Development Code.

1.13 REMOVED MATERIALS

- A. The CONTRACTOR shall haul all excess materials off the job site. It will be the CONTRACTOR's responsibility to dispose of all excess material in an off-site acceptable location. No additional payment will be made for hauling or disposal of excess material.

1.14 SODDING DISTURBED AREAS

- A. The Contractor will be responsible for sodding all areas disturbed during construction. Sodding shall include laying, leveling, and rolling sod of similar variety to the existing sod. The contractor is responsible for watering until the new sod is firmly established.

1.15 IRRIGATION WATER

- A. The Contractor will be responsible for irrigation of all plantings until firmly established. Temporary irrigation system connections can be provided by the County as requested by the Contractor. The Contractor shall be responsible for monitoring plant health throughout the warranty period.

1.16 DRIVEWAY APRONS

- A. Driveway aprons shall be constructed at the locations shown on the construction drawings in accordance with FDOT Index 515.

1.17 QUANTITIES

- A. The CITY may delete or add quantities with an established unit price. Any change in the quantity shall not constitute a change in the unit price.

1.18 MANHOLES

- A. The CONTRACTOR is responsible to raise or lower any existing manholes, so they are flush with the new pavement.

1.19 BARRICADES AND PROJECTION OF WORK

- A. The CONTRACTOR shall protect his work, throughout its entire length, by the erection of suitable barricades and handrails where required. He shall further indicate this work at night by the maintenance of suitable lights or flares, especially along or across thoroughfares. He shall also comply with all laws or ordinances covering the protection of such work and the safety measures to be employed therein. The CONTRACTOR shall carry out his work so as not to deny access to private property.

1.20 BURNING

- A. Burning shall not be permitted on this project without prior approval from the Engineer and the Owner. If burning is allowed, it shall be the responsibility of the CONTRACTOR to obtain all required burning permits, and to have adequate supervision and safety measures at all times during burning. No unattended burning will be allowed.

1.21 EXCAVATION SAFETY

- A. All excavation operations involved in this project shall comply with the Trench Safety Act (90-96, Laws of Florida) which specifically adopts the provision of the Occupational Safety and Health Administrations Excavation Safety Standards (29 C.F.R. Part 1926.650 Subpart P)
- B. It shall be the responsibility of the CONTRACTOR to ensure worker safety, provide sufficient required insurance, comply with all safety codes, laws, and requirements, and to include any cost of such safety requirements in the project bid. No additional compensation shall be allowed for the cost of such compliance.
- C. It shall be the CONTRACTOR's option and responsibility to select the compliance method(s) and to ensure the proper employment of said method(s) during the entire project.
- D. These standards shall apply to all areas of construction whether or not specifically mentioned in another division of these specifications.

1.22 LICENSING

- A. The CONTRACTOR and all subcontractors shall be properly licensed in Sumter County, Florida.

1.23 OWNER DIRECT PURCHASE

- A. It is the intent of the City of Wildwood to preorder the below listed items for this project in order to realize the tax savings. A detailed list of items can be found in the appendices. The successful bidder will be required to provide the full cost of all equipment and associated taxes to the Owner. Should the Owner elect to directly purchase any materials, a deductive change order will be issued in the full amount of the vendor's quote plus applicable taxes.
 - 1) Pump
 - 2) Control Panel and Electrical Equipment
 - 3) Chemical Metering Pump
- B. This information shall be used by the City of Wildwood to determine the appropriate change order amounts and to issue a purchase order for the owner direct purchase of the equipment. The City of Wildwood may also use the information to add or delete items from the vendor's scope of supply for this project at the City's sole discretion.
- C. The CONTRACTOR's responsibility for the equipment during the project will remain unchanged as it relates to the equipment being purchased by the City and the CONTRACTOR shall retain all responsibilities that are or were outlined in the specifications regarding this equipment as if they had actually purchased it; including, but not limited to:
 - 1) Negotiating and providing vendor pricing to the City.
 - 2) Preparing a purchase order outline for use by the City issuing a City Purchase order to the Vendor
 - 3) The CONTRACTOR shall review all shop drawings, make necessary comments, and maintain shop drawings review and approval through delivery of equipment.
 - 4) The Contract shall provide all operations and maintenance manuals to the City for

their use as required by the specifications.

- 5) The CONTRACTOR shall expedite delivery of the equipment.
- 6) The CONTRACTOR shall receive all equipment and store same on the project site prior to installation.
- 7) The CONTRACTOR shall install the equipment in accordance with the contract specifications.
- 8) The CONTRACTOR shall coordinate the manufacturer's approval of installation of the equipment and for a representative to come to the project site for startup, test, and approval operation of the equipment.
- 9) The CONTRACTOR shall warranty the equipment as if they purchased same and be responsible for the equipment warranty throughout the warranty period.

1.24 DEMOLITION

- A. The extent of the demolition work is indicated on the drawings or as required for the installation of the new components. The work includes any other miscellaneous work associated with the removal of aboveground and below ground structures, piping, equipment, conduit, wire, valve pads, valve boxes, fencing, signs, concrete slabs, asphalt, and any other items required to be removed from the project.
- B. The CONTRACTOR shall be responsible for all excavation, including rock, unsuitable soils, bedding, backfill, dewatering, sheeting, testing and proper disposal of any items demolished as part of this project as necessary
- C. The CONTRACTOR shall be responsible for all shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished, and adjacent facilities or work to remain.
- D. The CONTRACTOR shall return any equipment in working condition to the City.
- E. The CONTRACTOR shall submit a schedule indicating proposed methods and sequence of operations for demolition work to Engineer for review and approval prior to commencement of work. The CONTRACTOR shall provide a detailed sequence of demolition and removal work to ensure uninterrupted operation of the City's onsite operations.

1.25 CONSTRUCTION SEQUENCE AND TEMPORARY BYPASS PUMPING

- A. The CONTRACTOR shall coordinate directly with the City of Wildwood Wastewater Department to schedule shutting off the applicable upstream lift stations during the Ashley WTP Well No. 2 construction and lift station pump installation. The CONTRACTOR shall provide pipeline plugs and a standby pump truck as required. Night work may be required for certain operations, but only with approval from the Owner.
- B. At each location where bypass pumping is deemed necessary, the CONTRACTOR shall provide bypass pumping system, including pipeline plugs, pumps of adequate size to handle peak flow, and temporary discharge piping to ensure total flow of main can be safely diverted around the area of work. Bypass pumping system shall be required to operate 24 hours per day.
- C. The CONTRACTOR shall provide adequate standby equipment available and ready for immediate operation and use in the event of an emergency or breakdown. Install one standby pump for each size pump utilized at the mainline flow bypassing locations, ready for use in the event of primary pump failure.
- D. For each system, prior to placing bypass equipment, the CONTRACTOR shall submit to Engineer detailed plans and descriptions outlining provisions and precautions to be taken regarding handling of existing wastewater flows. Include locations, equipment capacities, materials, and other incidental items necessary and/or required to ensure proper protection

of facilities, including protection of access and bypass pumping locations from damage due to discharge flows, and compliance with requirements and permit conditions specified within. Construction associated with each system shall not begin until Engineer has reviewed provisions and requirements.

END OF SECTION

SECTION 01150 – MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. The following explanation of the Measurement and Payment for the bid items is provided; however, the omission of reference to any item shall not alter the intent of the Bid Form or relieve the Contractor of the necessity of constructing a complete project under this Contract.
- B. The quotations prepared by the Contractor for the various items of work are intended to establish a total price for completion of the work in its entirety. Should the contractor feel that the cost for any particular work item has not been established by the Schedule of Payment items or this section, the Contractor shall include the cost for that work in one of the bid items so the proposal for the project reflects the total cost to complete the work in its entirety.
- C. The quantities set forth in the Bid Form are approximate and are given to establish a uniform basis for the comparison of bids. The Owner reserves the right to increase or decrease the quantity of any item or portion of the work during the progress of construction in accordance with the terms of the Contract. The Schedule of Values shall serve as a basis of developing additive or deductive Change Orders.
- D. Unit prices are used as a means for computing the bid, for Contract purposes, for periodic payments, for determining value of additions or deletions.
- E. Payment shall be made for the items listed on the Bid Form on the basis of the work actually performed and completed, such work including but not limited to, the furnishing of all necessary labor, materials, equipment, tools, transportation, delivery, disposal of waste and surplus material, restoration, and all other appurtenances to complete the construction and installation of the work as shown on the drawings and described in the specifications.

1.02 SUBMITTALS

- A. Informational:
 - 1) Schedule of Values
 - 2) Application for Payment
 - 3) Final Application for Payment
- B. Submittals shall be in accordance with Section 01300.

1.03 SCHEDULE OF VALUES

- A. Contractor shall prepare a schedule of values for review with the return of the executed agreement to the Owner. The schedule shall contain the installed value of the component parts of work for the purpose of making progress payments during the construction period.
- B. The schedule shall contain sufficient detail for proper identification of work accomplished. The sum of all scheduled items shall equal the total value of the contract.
- C. Unit Price Work:
 - 1) Separate payment will be made for the items of work described herein and listed on the Bid Form. Any related work not specifically listed, but required for satisfactory completion of the work shall be considered to be included in the scope of the appropriate listed work items.
 - 2) No separate payment will be made for the following items and the cost of such work shall be included in the applicable pay items of work. Final payments shall not be requested by the Contractor or made by the City until as-built (record) drawings have been submitted and approved by the City and Engineer.

- 3) Shop Drawings, Working Drawings.
 - 4) Clearing, grubbing, and grading except as hereinafter specified.
 - 5) Trench excavation, including necessary pavement removal and rock removal
 - 6) Dewatering and disposal of surplus water.
 - 7) Structural fill, backfill, and grading.
 - 8) Replacement of unpaved roadways, and shrubbery plots.
 - 9) Cleanup and miscellaneous work.
 - 10) Foundation and borrow materials
 - 11) Testing and placing system in operation.
 - 12) Any material and equipment required to be installed and utilized for the tests.
 - 13) Pipe, structures, pavement replacement, asphalt and shell driveways and/or appurtenances included within the limits of lump sum work
 - 14) Maintaining the existing quality of service during construction.
 - 15) Maintaining or detouring of traffic.
 - 16) Appurtenant work as required for a complete and operable system.
 - 17) Seeding and mulching.
 - 18) As-built Record Drawings.
- D. Lump Sum Work:
- 1) Where payment for items is shown to be paid for on a lump sum basis, no separate payment will be made for any item of work required to complete the lump sum items. Lump sum contracts shall be complete, tested and fully operable prior to request for final payment. Contractor may be required to provide a break-down of the lump sum totals.
 - 2) An unbalanced, front end loaded schedule will not be acceptable.

1.04 APPLICATION FOR PAYMENT

- A. Include accepted schedule of values for each portion of work and the unit price breakdown for the work to be paid on a unit price basis, and a listing of Owner selected equipment, if applicable, and allowances, as appropriate.
- B. Preparation:
 - 1) List each Change Order and Written Amendment executed prior to date of submission as a separate line item.
 - 2) Submit application for payment, a listing of materials on hand as applicable, and such supporting data as may be requested by the Owner/Engineer.

PART 2 - PRODUCTS

2.01 ITEM DESCRIPTIONS FOR WILDWOOD ASHLEY WATER TREATMENT PLANT WELL 2 ADDITION

- A. Mobilization/Demobilization
 - 1) Method of Measurement: The quantity to be paid for under this Section shall be on a lump sum (LS) basis. The Contractor's lump sum price shall include full compensation for all work related to mobilization and demobilization for infrastructure and the work items listed below, and any other related work, except for any work designated to be paid for separately or to be specifically included in

the costs of other work under the Contract.

- 2) Basis of Payment: Measurement and payment for mobilization will be made at the contract lump sum price for the item, which price and payment shall be full compensation for the preparatory work and operations in mobilizing for beginning work on the project including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site, and for the establishment of field office as necessary, building, safety equipment and first aid supplies, sanitary and other facilities, as required by these specifications, and State and City laws and regulations; and any other reconstruction expense necessary for the start of the work; the cost of field engineering, permits and fees, construction schedules, shop drawings, temporary facilities, laydown storage area, construction aids, erosion control, any general requirements, indemnification, anything not included in the other bid form line items, work associated with CONTRACTOR support during Owner/ENGINEER reviews and inspection, reinspection and any re-work resulting from same. The Contractor shall submit invoices substantiating the cost of mobilization with each pay request and shall not exceed percent complete of the construction work. The percentage of monthly compensation for this item shall match the percentage of total contract work completed to date as agreed with Owner/ENGINEER. The items specified in this bid item consist of the costs of any pre and post construction expenses necessary for the start and completion of the project, excluding the cost of construction materials.

B. Bonds and Insurance

- 1) Method of Measurement: The quantity to be paid for under this Section shall be on a lump sum (LS) basis.
- 2) Basis of Payment: Payment shall be made at the Contract Lump Sum Price and shall include all compensation for providing and maintaining bonds and insurance for the project in accordance with the Contract documents.

C. Survey Layout and Record Drawings

- 1) Method of Measurement: The quantity to be paid for under this Section shall be on a lump sum (LS) basis.
- 2) Basis of Payment: Payment shall be made at the Contract Lump Sum Price and shall include, but not be limited to, laying out the proposed improvements in the field, setting temporary and permanent benchmarks, grade stakes, etc., preparation of Record Drawings, all in accordance with the project specifications and City standards. The Record Drawings shall be provided certified by a Florida licensed land surveyor.

D. Site Work and Preparation

- 1) Method of Measurement: The quantity to be paid for under this Section shall be on a Lump Sum (LS) basis.
- 2) Basis of Payment: Payment shall be at the Contract Lump Sum Price and shall include, but not be limited to, furnishing all materials, labor, and equipment required to perform all, fencing removal and replacement, drilling, testing, and any other work associated with the site work and site preparation as shown on the drawings and specified herein

E. Restoration

- 1) Method of Measurement: The quantity to be paid for under this Section shall be on a Lump Sum (LS) basis.
- 2) Basis of Payment: Payment shall be at the Contract Lump Sum Price and shall

include, but not be limited to, furnishing all materials, labor, and equipment required to restore the project and staging areas to an equal or better condition than what was existing prior to the start of the project except for any work designated to be paid for separately or to be specifically included in the costs of other work under the Contract.

F. Professional Site Videotaping (Pre & Post Construction)

- 1) Method of Measurement: The quantity to be paid for under this Section shall be on a lump sum (LS) basis.
- 2) Basis of Payment: Payment shall be made at the Contract Lump Sum Price and shall include, but not be limited to, performing and providing video documentation of the existing site conditions and utilities, as well as video documentation of post-construction site conditions, well, and utilities as directed by the Owner.

G. Vertical Turbine Well Pump

- 1) Method of Measurement: The quantity to be paid for under this Section shall be on a Lump Sum (LS) basis.
- 2) Basis of Payment: Payment shall be at the Contract Lump Sum Price and shall include, but not be limited to, furnishing all materials, labor, and equipment necessary to construct and install the well pump as specified by the contract documents. Contractor scope of work to include transportation and installation of owner supplied pumps, motors, and appurtenances. Contractor scope shall also include all below ground and aboveground discharge piping associated with the well pumps (within 5 feet of the well head), valves, assemblies, mechanical adjustments, pipe support assemblies, fittings, restraints, adapters, concrete pad, and all other appurtenances and requirements, including bacteriological and pressure testing, start-up, identification tags, and O&M manuals, to provide a fully functional and complete system in accordance with the Contract Documents.

H. Well Head (Piping, Valves, Concrete Pad)

- 1) Method of Measurement: The quantity to be paid for under this Section shall be on a lump sum (LS) basis.
- 2) Basis of Payment: Payment shall be at the Contract Lump Sum Price and shall include, but not be limited to, furnishing all materials, labor, and equipment required to install the owner supplied flow meter and all aboveground discharge piping associated with the well pumps, valves, assemblies, mechanical adjustments, pipe support assemblies, fittings, restraints, adapters, concrete pad, water meter, and all other appurtenances and requirements, to provide a fully functional and complete system in accordance with the Contract Documents.

I. Yard Piping

- 1) Method of Measurement: The quantity to be paid for under this Section shall be on a lump sum (LS) basis
- 2) Basis of Payment: Payment shall be made at the Contract Unit Price per lineal foot and shall include, but not be limited to, furnishing all materials, labor, and equipment required to remove all existing surface material and protruding objects, excavation of any type of material including rock, provision of suitable pipe bedding as may be required, hauling and legal off-site disposal of debris, temporary shoring, support of existing aboveground and below ground improvements to remain and be protected, dewatering, installation of the water main in accordance with City standards including the additional piping required to account for the vertical change in elevation, layout, ductile iron fittings, welded steel casing, spacers, transition fittings, adaptors, couplings, joint restraints, location wire, filling, flushing, cleaning, pressure testing (including temporary caps/plugs for testing as

may be required), trench backfilling, compaction, density testing, and any other items required for a complete and functional system as shown in the project plans and specifications.

J. Chemical System Improvements

- 1) Method of Measurement: The quantity to be paid for under this Section shall be on a Lump Sum (LS) basis.
- 2) Basis of Payment: Payment shall be made at the Contract Lump Sum Price and shall include, but not be limited to, all materials, labor, and equipment required to install owner supplied chemical metering pump and all proposed piping, valves, fittings, and connections to provide a complete and functional chemical feed system in accordance with the plans and Contract Documents.

K. Electrical And I&C

- 1) Method of Measurement: The quantity to be paid for under this Section shall be on a Lump Sum (LS) basis.
- 2) Basis of Payment: Payment shall be made at the Contract Lump Sum Price and shall include, but not be limited to, furnishing all materials, labor, and equipment required to install the new conduit and wiring with any stripping, trenching, compaction, backfill and re sodding required; furnishing all materials, labor, and equipment for the installation of owner supplied panel and instrumentation equipment, new well pump starter, new pump disconnect, chlorine pump HOA enclosure, equipment racks, PLC and controls programming, coordination and integration with the Owner's SCADA vendor, new instruments, new conduit, duct bank, pull boxes, junction boxes and wiring; testing of power and control wiring to each of the new components; and all other materials and equipment necessary for a complete and fully operable system, including testing and start-up, identification tags, O&M manuals as shown in the Contract Documents, ready for approval by the Engineer and acceptance by the Owner.

END OF SECTION

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. The Contractor shall submit to the Engineer, shop drawings, project data and samples required by specification sections.

1.02 SCHEDULES

- A. The Contractor shall prepare and submit a Construction Schedule prior to beginning work.
- B. The Contractor shall prepare and submit a separate schedule listing dates for submission of shop drawings and projected return dates.

PART 2 - PRODUCTS

2.01 SHOP DRAWINGS

- A. Original drawings, prepared by Contractor, Subcontractor, Supplier or Distributor, which illustrate portions of the Work; showing fabrication, layout, setting or erection details including, but not limited to the following:
 - 1) Mechanical equipment
 - 2) Valves and operators (w/specific locations)
 - 3) Piping and fittings (w/specific locations)
 - 4) Electrical wiring diagrams
 - 5) Concrete mix designs (with specific locations), grouts, etc.
 - 6) Paintings, coatings, liners, etc.
 - 7) Fencing details
 - 8) Asphalt and base material
- B. Shop drawing submittals shall be prepared by a qualified detailer.
- C. Identify details by reference to sheet numbers and detail shown on Contract Drawings.

2.02 PROJECT DATA

- A. Manufacturer's standard schematic drawings:
 - 1) Modify drawings to delete information which is not applicable to project.
 - 2) Supplement standard information to provide additional information applicable to project.
- B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data.
 - 1) Clearly mark each copy to identify pertinent materials, products or models.
 - 2) Show dimensions and clearances required.

- 3) Show performance characteristics and capacities.
- 4) Show wiring diagrams and controls.

2.03 SAMPLES

- A. Physical examples to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged.
- B. Office samples of sufficient size and quantity to clearly illustrate:
 - 1) Functional characteristics of product or material, with integrally related parts and attachment devices.
 - 2) Full range of color samples.

2.04 PAY REQUESTS

- A. Pay Requests shall be made in accordance with the requirements of the Agreement between Owner and Contractor.
- B. Amount of Retainage shall be 10% unless otherwise stated in the Agreement between Owner and Contractor.

PART 3 - EXECUTION

3.01 SUBMISSION REQUIREMENTS

- A. Schedule submissions at least 14 days before dates reviewed submittals will be needed.
- B. Submit number of copies of Shop Drawings, Project Datum and Samples which Contractor requires for distribution plus 4 copies which will be retained by Engineer.
- C. Accompany submittals with transmittal letter, in duplicate, containing:
 - 1) Date.
 - 2) Project title and number.
 - 3) Contractor's name and address.
 - 4) Notification of deviations from Contract Documents.
 - 5) Other pertinent data.
- D. Submittals must include:
 - 1) Date of submittal and revision dates.
 - 2) Project title and number.
 - 3) The names of:
 - a. Engineer.
 - b. Contractor.
 - c. Subcontractor.

- d. Supplier.
 - e. Manufacturer.
 - f. Separate detailer when pertinent.
- 4) Identification of product or material.
 - 5) Relation to adjacent structure or materials.
 - 6) Field dimensions clearly identified as such.
 - 7) Identification of deviations from Contract Documents.
 - 8) Contractor's stamp, initialed or signed, certifying to review of submittal, verification of field measurements and compliance with Contract Documents.

3.02 RESUBMISSION REQUIREMENTS

A. Shop Drawings:

- 1) Revise initial drawings as required and resubmit as specified for initial submittal.
- 2) Indicate on drawings any changes which have been made other than those requested by Engineer.

B. Project Data and Samples:

- 1) Submit new datum and samples as required for initial submittal.

3.03 DISTRIBUTION OF SUBMITTALS AFTER REVIEW

A. Distribute copies of Shop Drawings and Project Datum which carry Engineer's stamp, to:

- 1) Contractor's file.
- 2) Job site file.
- 3) Record Documents file.
- 4) Other prime contractors.
- 5) Subcontractors.
- 6) Supplier.
- 7) Fabricator.

B. Distribute samples as directed.

END OF SECTION

SECTION 01410 - TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Contractor shall employ and pay for services of an Independent Testing Laboratory to perform specified services.
- B. Inspection, Sampling and Testing is required for:
 - 1) Densities and Proctors (for trench backfill, soil and roadway base materials compaction)
 - 2) Asphalt mix designs
 - 3) Cast-in-place Concrete (slump and compressive strength)
 - 4) Bacteriological Clearance
 - 5) Painting
 - 6) Water Quality Tests
 - 7) Other operations specified in these specifications or as required by the Engineer.
- C. Contractor's employment of Testing Laboratory shall in no way relieve Contractor of their obligation to perform Work in accordance with Contract.

1.02 QUALIFICATION OF LABORATORY

- A. Meet "Recommended Requirements for Independent Laboratory Qualification", latest edition, published by American Council of Independent Laboratories.
- B. Meet basic requirements of ASTM E 329-90 "Standard Practice for Use in the Evaluation of Testing Agencies for Concrete and Steel as Used in Construction".
- C. Certified in the State of Florida in accordance with FDEP requirements.

1.03 LABORATORY DUTIES; LIMITATIONS OF AUTHORITY

- A. Cooperate with Engineer and Contractor; provide qualified personnel promptly on notice.
- B. Perform specified inspections, sampling and testing of materials and methods of construction:
 - 1) Comply with specified standards; ASTM, other recognized authorities, and as specified.
 - 2) Ascertain compliance with requirements of Contract Documents.
- C. Promptly notify Engineer, and Contractor, of irregularities or deficiencies of Work which are observed during performance of services.
- D. Promptly submit 2 copies of reports of inspections and tests to Engineer, including:
 - 1) Date issued.
 - 2) Project title and number.
 - 3) Testing Laboratory name and address.
 - 4) Name of Inspector

- 5) Date of inspection or sampling.
 - 6) Record of temperature and weather.
 - 7) Date of test.
 - 8) Identification of product and specification section.
 - 9) Location in project.
 - 10) Type of inspection or test.
 - 11) Observations regarding compliance with Contract Documents.
- E. Laboratory is not authorized to:
- 1) Release, revoke, alter, or enlarge on, requirements of Contract Documents.
 - 2) Approve or accept any portion of Work.
 - 3) Perform any duties of the Contractor.

1.04 CONTRACTOR'S RESPONSIBILITIES

- A. Select laboratory, and coordinate testing with Lab and Engineer's representative.
- B. Cooperate with Laboratory personnel, provide access to Work.
- C. Provide to Laboratory, preliminary representative samples of materials to be tested, in required quantities.
- D. Furnish copies of mill test reports.
- E. Furnish casual labor and facilities:
 - 1) To provide access to Work to be tested.
 - 2) To obtain and handle samples at the site.
 - 3) To facilitate inspections and tests.
 - 4) For Laboratory's exclusive use for storage and curing of test samples.
- F. Notify Laboratory sufficiently in advance of operations to allow for his assignment of personnel and scheduling of tests.
- G. Pay for services of the Testing Laboratory to perform additional inspections, sampling and testing required:
 - 1) For Contractor's convenience.
 - 2) When initial tests indicate Work does not comply with Contract Documents.
 - 3) Such payment shall be made directly by the Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01500 - PRE-CONSTRUCTION AND POST-CONSTRUCTION VIDEO

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Furnish all necessary labor, materials, and equipment to perform color audio-video recording of the project site surfaces as specified herein. Contractor shall furnish to the Engineer and Owner an original copy of a continuous color audio-video DVD recording of each project segment.
- B. The Owner reserves the right to reject the audio-video DVD because of poor quality, unintelligible audio or uncontrolled pan or zoom. Any video rejected by the Owner shall be re-videoed at no additional cost to the Owner. The Contractor shall submit two (2) DVD to the Engineer for format and content approval prior to the start of any work.

1.02 PURPOSE OF WORK

- A. The purpose of the color audio-video taping of the project is to provide the necessary information for restoration of surface features after completion of the project. The Contractor shall be responsible for repairing any damage(s) or defect(s) not documented as existing prior to construction.

PART 2 - QUALITY ASSURANCE

2.01 VIDEO RECORDING

- A. The video recording shall be performed by a qualified audio-video taping firm or individual knowledgeable in construction practices and experienced in the implementation of established inspection procedures.

PART 3 - EXECUTION

3.01 AUDIO-VIDEO SURVEY

- A. Prior to the commencement and upon completion of any construction, equipment or material mobilization, the Contractor shall perform an audio-video survey of each project site area which will be excavated, or which has the potential to be disturbed by the Contractor's operations. Specific areas of this project include, but are not limited to:
 - 1) All routes that are scheduled for construction, including both sides of all streets and the entire width of easements plus 10 feet on each side on which construction is to be performed. The surface features recorded shall include, but not be limited to, roadways, driveways, sidewalks, curbs, culverts, headwalls, retaining walls, buildings, above-ground utilities, parks, lawns, landscaping, trees, tree canopies, shrubbery, and fences.
 - 2) All areas to be entered by vehicles or equipment, including construction areas for both internal and excavated improvements.
 - 3) Other areas that may be impacted by the work, including work staging areas and field offices, as directed by the Owner.
- B. All video recording shall be in full color.
- C. A complete view, in sufficient detail with audio description of the exact location shall be provided.

- D. The engineering plans shall be used as a reference for stationing in the audio portion of the recordings for easy location identification.
- E. All video recordings shall contain the name of the project, the date and time of the video recording, the name and address of the photographer, and any other identifying information required.
- F. All video recording shall be performed during regular business hours, unless otherwise approved by the Owner. No video recording shall be performed if the weather is not acceptable, such as rain, fog, or elongated shadows that distort perception and tend to prevent clear resolution.
- G. Two complete sets of video recordings shall be submitted on digital video disks (DVD) for the permanent and exclusive use of the Engineer and Owner prior to the start of any construction on the project.
- H. Construction shall not start until the pre-construction video recordings are completed, submitted, and accepted by the Engineer and Owner. In addition, no progress payments shall be made until the pre-construction video recordings are accepted by the Owner.
- I. The final payment shall not be made until the post-construction video recordings are accepted by the Owner.

PART 4 - PRODUCTS (NOT USED)

END OF SECTION

SECTION 01700 – CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Comply with requirements stated in General Conditions and in Specifications for administrative procedures in closing out the Work.

1.02 SUBSTANTIAL COMPLETION

- A. When Contractor considers the Work is substantially complete, the Contractor shall submit to the Engineer:
 - 1) A written notice that the Work, or designated portion thereof, is substantially complete.
 - 2) A list of items to be completed or corrected.
- B. Within a reasonable time after receipt of such notice, the Engineer will inspect to determine the status of completion.
- C. Should the Engineer determine that the Work is not substantially complete:
 - 1) The Engineer will promptly notify the Contractor, in writing, giving the reasons, therefore.
 - 2) Contractor shall remedy the deficiencies in the Work and send a second written notice to substantial completion to the Engineer.
 - 3) The Engineer will re-inspect the Work.
- D. When the Engineer finds that the Work is substantially complete, the Engineer will:
 - 1) Prepared and deliver to Owner a tentative Certificate of Substantial Completion with a tentative list of items to be completed or corrected before final payment.
 - 2) After consideration of any objections made by the Owner as provided in Conditions of the Contract, and when the Engineer considers the Work substantially complete, the Engineer will execute and deliver to the Owner and the Contractor a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.03 FINAL INSPECTION

- A. When Contractor considers the Work is complete, the Contractor shall submit written certification that:
 - 1) Contract Documents have been reviewed.
 - 2) Work has been completed in accordance with Contract Documents.
 - 3) Work has been completed with the list of items to be corrected.
 - 4) Equipment and systems have been tested in the presence of the Owner's representative and are operational.
 - 5) Work is completed and ready for final inspection.
- B. The Engineer will inspect to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should the Engineer consider that the Work is incomplete or defective:
 - 1) The Engineer will promptly notify the Contractor in writing, listing the incomplete or defective work.
 - 2) Contractor shall take immediate steps to remedy the stated deficiencies and send

a second written certification to the Engineer that the Work is complete.

3) The Engineer will re-inspect the Work

D. When the Engineer finds that the Work is acceptable under the Contract Documents, the Engineer shall request the Contractor to make closeout submittals.

1.04 RE-INSPECTION FEES

A. Should the Engineer perform re-inspections due to failure of the Work to comply with the claims of status of completion made by the Contractor:

1) Owner will compensate the Engineer for such additional services.

2) Owner will deduct the amount of such compensation from the final payment to the Contractor.

1.05 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

A. Evidence of compliance with requirements of governing authorities.

B. Project Record Documents.

C. Operating and Maintenance Data, Instructions to Owner's Personnel.

D. Warranties and Bonds.

E. Keys and Keying Schedule.

F. Spare Parts and Maintenance Materials.

G. Evidence of Payment and Release of Liens.

H. Certificate of Insurance for Products and Completed Operations.

I. Contractor's Final Affidavit.

J. Lien Waivers from Subcontractors and Suppliers.

1.06 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting to the Engineer.

B. Statement shall reflect all adjustments to the Contract Sum:

1) The original Contract Sum.

2) Additions and deductions resulting from:

a. Previous Change Orders

b. Unit Prices

c. Deductions for uncorrected Work

d. Penalties and Bonuses

e. Deductions for liquidated damages

f. Deductions for re-inspection payments

g. Other adjustments

3) Total Contract Sum, as adjusted.

4) Previous payments.

5) Adjustment in Contract Time.

6) Sum remaining due.

C. Engineer will prepare a final Change Order, reflecting approved adjustment to the Contract

Sum, which were not previously made by Change Orders.

1.07 FINAL APPLICATION FOR PAYMENT:

- A. Contractor shall submit the final Application for Payment in accordance with procedures and requirement stated in the General Conditions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01720 - PROJECT RECORD DRAWINGS

PART 1 - GENERAL

1.01 PROJECT RECORD DOCUMENTS

- A. Maintain at the site for the Owner one record copy of:
 - 1) Drawings.
 - 2) Specifications.
 - 3) Addenda.
 - 4) Change Orders and other Modifications to the Contract.
 - 5) Engineer Field Orders or written instructions.
 - 6) Reviewed Shop Drawings.
 - 7) Field test records.

1.02 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Conditions of the Contracts
- B. Section 01700 – Project closeout

1.03 MAINTENANCE OF DOCUMENTS

- A. Store documents in approved location apart from documents used for construction.
- B. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- C. Make documents available at all times for inspection by Engineer and Owner. Record drawing information shall be maintained concurrently with Pay Requests.

1.04 MARKING DEVICES

- A. Provide ink marking pens for recording information in a color code.

1.05 RECORDING

- A. Label each document "PROJECT RECORD" in neat large, printed letters.
- B. Record information concurrently with construction progress.
 - 1) Do not conceal any work until required information is recorded.
 - 2) Contractor shall mark clearly on the record drawing any changes, modifications, or deviations from the issued construction documents.
 - 3) For construction documents that are constructed per plan, the contractor shall acknowledge on each sheet that the as-built condition is per the plan.
- C. Drawings shall be drawn to record actual construction:
 - 1) Horizontal location of pipes shall be provided any time the pipe passes a permanent surface reference point. Permanent surface reference points must be permanent structures manholes, catch basins, concrete sidewalk, or concrete curbs. Edge of pavement and road intersections may not be used without the Engineer's approval. Any deviations from the alignment shown on the drawings must be noted.
 - 2) Vertical location of piping shall be provided at fittings, tie-ins and 250-foot intervals. Vertical location shall be pipe elevation as called for on the drawings.
 - 3) All fittings, including sleeves and valves shall be located vertically and horizontally

by two measurements to permanent surface reference points.

- 4) Field changes of dimension and detail.
- 5) Changes made by Field Order or by Change Order.
- 6) Details not on original Contract Drawings.

D. Specifications and Addenda; legibly mark each Section to record:

- 1) Manufacturer, trade name, catalog number, and supplier of each item actually installed.
- 2) Changes made by Field Order or by Change Order.

1.06 SUBMITTAL

- A. The contractor shall submit progress record drawings with each pay application for review by the engineer. Applications for payment submitted without progress record drawings may not be reviewed.
- B. The contractor shall submit progress record drawings with the notification of substantial completion.
- C. At contract close-out, Record Documents shall be submitted to Engineer in the following formats for Owner:
 - 1) Two CD's with electronic as-builts in AutoCAD format.
 - 2) Three 24" x 36" hard copy as-builts.
- D. Accompany submittal with transmittal letter in duplicate, containing:
 - 1) Date.
 - 2) Project title and number.
 - 3) Contractor's name and address.
 - 4) Title and number of each record document.
 - 5) Signature of Contractor or his authorized representative.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01730 - OPERATION AND MAINTENANCE MANUALS

PART 1 - GENERAL

1.01 RELATED INFORMATION

- A. Compile product data and related information appropriate for Owner's maintenance and operation of products furnished under the Contract.
 - 1) Prepare operating and maintenance data as specified in this Section and as referenced in other pertinent sections of Specifications.
- B. Instruct Owner's personnel in the maintenance of products and in the operation of equipment and systems.
- C. Related Requirements Specified in Other Sections.
 - 1) Section 01300 – Submittals
 - 2) Section 01720 - Project Record Drawings

1.02 FORM OF SUBMITTALS

- A. Prepare data in the form of an instructional manual and electronic format for use by Owner's personnel.
- B. Hard-Copy Format:
 - 1) Size: 8-1/2 in. x 11 in.
 - 2) Text: Manufacturer's printed data, or neatly typewritten.
 - 3) Drawings:
 - a. Provide reinforced punch binder tab, bind in with text.
 - b. Fold larger drawings to the size of the text pages.
 - 4) Provide flyleaf for each separate product, or each piece of operating equipment.
 - a. Provide typed description of product, and major component parts of equipment.
 - 5) Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS". List:
 - a. Title of Project.
 - b. Identity of separate structure as applicable.
 - c. Identity of general subject matter covered in the manual.
- C. Binders:
 - 1) Commercial quality expandable catalog binders with durable and cleanable plastic covers.
 - 2) When multiple binders are used, correlate the data into related consistent groupings.

- D. Electronic format shall be in .pdf file format. Copies of specific manuals shall either be scanned or converted to .pdf format and submitted on CD disc to Owner. Submit after approval of hard copies from Engineer.

1.03 CONTENT OF MANUAL

- A. Neatly typewritten table of contents for each volume, arranged in a systematic order.
 - 1) Contractor, name of responsible principal, address, and telephone number.
 - 2) A list of each product required to be included, indexed to the content of the volume.
 - 3) List, with each product, the name, address, and telephone number of:
 - a. Subcontractor or installer.
 - b. Maintenance contractor, as appropriate.
 - c. Identify the area of responsibility of each.
 - d. Local source of supply for parts and replacement.
 - 4) Identify each product-by-product name and other identifying symbols as set forth in Contract Documents.
- B. Product Data:
 - 1) Include only those sheets which are pertinent to the specific product.
 - 2) Annotate each sheet to:
 - a. Clearly identify the specific product or part installed.
 - b. Clearly identify the data applicable to the installation.
 - c. Delete references to inapplicable information.
- C. Drawings:
 - 1) Supplement product data with drawings as necessary to clearly illustrate relations of component parts of equipment and systems.
 - 2) Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation.
 - 3) Do not use Project Record Documents as maintenance drawings.
- D. Written text, as required to supplement product data for the particular installation:
 - 1) Organize in a consistent format under separate headings for different procedures.
 - 2) Provide a logical sequence of instructions for each procedure.
- E. Copy of each warranty issued.
 - 1) Provide information sheet for Owner's personnel, give:
 - a. Proper procedures in the event of failure.

- b. Instances which might affect the validity of warranties.

1.04 1.04 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Submit three (3) complete paper copies and three (3) electronic copies of manual in final form.
- B. Content, for each unit of equipment and system, as appropriate:
 - 1) Description of unit and component parts.
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data and tests.
 - c. Complete nomenclature and commercial number of all replaceable parts.
 - 2) Operating procedures:
 - a. Start-up, break-in, routine, and normal operating instructions.
 - b. Regulation, control, stopping, shutdown and emergency instructions.
 - c. Summer and winter operating instructions.
 - d. Alignment, adjusting and checking.
 - 3) Servicing and lubrication schedule:
 - a. List of lubricants required for each piece of equipment.
 - b. Schedule for manufacturer recommended maintenance.
 - 4) Manufacturer's printed operating and maintenance instructions.
 - 5) Original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.
 - 6) Other data as required under pertinent sections of specifications.

1.05 SUBMITTAL SCHEDULE

- A. Submit one copy of completed data in final form at least fifteen days prior to final inspection or acceptance.
 - 1) Copy will be returned after final inspection or acceptance, with comments.
- B. Submit specified number of copies of approved data in final form at least 10 days after final inspection or acceptance.

1.06 INSTRUCTION OF OWNER'S PERSONNEL

- A. Prior to final inspection or acceptance, fully instruct Owner's designated operating and maintenance personnel in the operation, adjustment and maintenance of all products, equipment, and systems.
- B. Operating and maintenance manual shall constitute the basis of instruction.
 - 1) Review contents of manual with personnel in full detail to explain all aspects of

operations and maintenance.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 02016 – EXISTING UTILITIES AND UNDERGROUND STRUCTURES

PART 1 - GENERAL

1.01 GENERAL

- A. The plans depict the approximate location of known existing utilities. The locations of those facilities (horizontal and vertical) were obtained from survey information, plans, and record drawings. The depiction of the approximate location of known existing utilities does not guarantee that those facilities are in the exact location shown, nor that all utilities present are shown.

1.02 CONTRACTOR'S RESPONSIBILITIES

- A. Locate the cables, ducts, conduit, pipeline, etc. in advance of the proposed construction.
- B. Coordinate the Work with all existing utility companies.
- C. Notify Engineer of any substantial changes and/or conflicts that would require a deviation in the plans. Late discovery of existing underground utilities does not constitute "required" deviations should early discovery prevent them.
- D. Repair any damage done to existing utilities at no additional expense to the Owner.

END OF SECTION

SECTION 02110 - SITE CLEARING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Work includes furnishing all labor and equipment necessary to clear the site and dispose of materials off-site, complete, including removing surface debris, removing all exotic vegetation, removing existing concrete slabs and structure, and excavating topsoil.

1.02 REGULATORY REQUIREMENTS

- A. Conform to applicable code for disposal of debris.
- B. Coordinate clearing Work with Owner's representatives.
- C. Remove all exotic vegetation in accordance with local, state, and Federal regulations.
- D. Protect wetland areas and maintain required wetland setbacks in accordance with local, state, and Federal regulations.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PROTECTION

- A. Locate, identify, and protect existing utilities that remain, from damage.
- B. Protect benchmarks and existing structures, not designated to be removed, from damage or displacement.
- C. Protect trees that are shown on the plan to remain.

3.02 REMOVAL

- A. Remove debris, rock, and extracted plant life from site. Legally dispose of debris off-site. Costs for removal are to be paid by Contractor.

3.03 SURVEY AND BARRICADING REQUIREMENTS

- A. Wetland Areas shall be surveyed and staked based on the approved site plan. No plant material shall be removed from wetland areas to facilitate surveying or soil boring sampling.
- B. Prior to clearing, the Contractor shall ensure that wetland areas are barricaded. Wetland areas shall be protected with physical barriers during all clearing and construction activities in accordance with the following guidelines:
 - 1) All Wetland Areas must be barricaded from the work area prior to any clearing of any part of the site or phase.
 - 2) Barricades must be high-visibility orange safety fence (recommended) with a final height of at least 4 feet above the ground and not attached to vegetation
 - 3) All barricades must be upright and maintained intact for the duration of construction.

- 4) Where areas are proposed for clearing (i.e. tank structures, utilities, drainage, paving, slabs etc.) the barricades must be offset at least 10 feet outside the Wetland Area or placed at the drip line of the canopy trees, whichever is greater.
 - 5) All native vegetation which is not located in areas requiring their removal as part of the development plans shall be retained in their undisturbed state.
- C. Barricades shall be maintained in good order and condition through construction of the project or phase. Cut of fill must meet existing grade without encroaching into Wetland Areas. Barricades shall not be removed until after the project or phase has been completed, inspected, and approved.

3.04 PROHIBITED ACTIVITIES

- A. Prohibited activities in the wetland areas or easements within wetland areas include, but are not limited to: construction or placing of building materials on or above the ground; dumping or placing soil or other substances such as garbage, trash, and cuttings; removal or destruction of native trees, shrubs or other native vegetation; excavation, dredging or removal of soil materials; diking or fencing; vehicular traffic including recreational vehicle and off road vehicle use; permanent irrigation, trimming, pruning, or fertilization; and any other activities detrimental to drainage, flood control, water conservation, erosion control or fish and wildlife conservation and preservation.

3.05 EXOTIC VEGETATION REMOVAL

- A. Exotic Vegetation is a plant species designated as a Category I or II as defined by the most current List of Florida's Most Invasive Species by the Exotic Pest Plant Council.
- B. Exotic Vegetation in adjacent wetland areas shall be removed by the least ecologically damaging method available. Such methods include hand pulling, hand spading, chain saw and/or treatment with an appropriate herbicide. No debris such as plant clippings or wood scraps shall be allowed in the wetland areas.
- C. Contractor shall retain an environmental consultant or contractor to properly identify between native and exotic vegetation.

END OF SECTION

SECTION 02150 - DEWATERING

PART 1 - GENERAL

1.01 SCOPE

- A. The work covered by this Section consists of furnishing all permits, labor, equipment, appliance and materials, and performing all operations required for dewatering all excavations as required for a complete project per the project plans and specifications.

1.02 RELATED SECTIONS SPECIFIED ELSEWHERE

- A. Section 01300 - Submittals.
- B. Section 02200 – Earthwork, Excavation, and Backfill.

PART 2 - PRODUCTS

2.01 TEMPORARY FACILITIES

- A. All materials and equipment shall be suitable and adequate to function continuously as a dewatering system.
- B. All material and equipment used in the dewatering system remain the property of the Contractor and shall be removed off-site when dewatering is completed.

PART 3 - EXECUTION

3.01 SUBMITTALS

- A. The Engineer/Architect shall review the dewatering method prior to commencing work.
- B. Submit the dewatering method or plan in accordance with Submittal specifications prior to commencing dewatering.

3.02 METHODS

- A. The method of dewatering is to be selected by the Contractor and may include:
 - 1) Wellpoints
 - 2) Sump pumps
 - 3) Bedding rock
 - 4) Other approved items.

3.03 DISCHARGE

- A. The Contractor shall provide all labor, materials, tools, and equipment necessary to properly control the quality of the discharge from his dewatering operations as described herein. The Contractor shall comply with all applicable laws, rules and regulations governing the discharge of water from his dewatering operations.
- B. Contractor shall not discharge water in any manner that will:
 - 1) Adversely affect water quality of adjoining water bodies.
 - 2) Violate Federal, State or local laws or regulations.

- 3) Allow discharge to flow onto private property.
 - 4) Hamper movement of traffic.
 - 5) Damage portions of the work previously constructed.
 - 6) Damage portions of existing facilities or structures.
- C. Dewatering discharge flows shall not be introduced into on-site stormwater systems and swales or sewer/treatment system without prior agreement from plant representatives.
- D. Contractor shall obtain and pay for any permits required to discharge the dewatering waters.

END OF SECTION

SECTION 02200 - EARTHWORK, EXCAVATION, AND BACKFILL

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. The work covered by this section consists of furnishing all labor, equipment, and materials, and performing all earthwork operations to include:
 - 1) Excavation and backfill of structures, foundations, and pavements.
 - 2) Surface preparation for structures, foundations, and pavements.
 - 3) Excavation and backfill of pipe trenches.
 - 4) Roadway area grading.
 - 5) Soil compaction and stabilization requirements for pipe trenches and roadway areas.
 - 6) Soil testing for pipe trenches and parking areas.

1.02 REFERENCES

- A. Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Latest Edition.
- B. American Society for Testing and Materials (ASTM)
 - 1) D698 Moisture-Density Relationship of Soils.
 - 2) D1556 Standard Method of Test for Density of Soil in Place by Sand Cone Method.
 - 3) D1557 Method for Test for Moisture-Density Relations of Soils Using a 10-Pound Rammer and 18-Inch Drop.
 - 4) D2487 Classification of Soils for Engineering Purposes.
 - 5) D2922 Density of Soil and Soil-Aggregate in Place by Nuclear Methods

1.03 RELATED SECTIONS SPECIFIED ELSEWHERE

- A. Drawings and general provisions of the Contract, including the General Conditions and Terms and Division 1 Specification sections, apply to this section.
- B. Section 01410 - Testing Laboratory Services
- C. Section 02150 – Dewatering

1.04 FIELD MEASUREMENTS AND COORDINATION

- A. Verify that survey benchmark, control point, and intended elevations for the work are as shown on the Drawings.
- B. Verify that work associated with lower elevation utilities is complete before placing higher elevation utilities.

1.05 SUBSURFACE SOILS DATA

- A. Owner and Engineer make no representations or statements as to site or soil conditions, and therefore do not assume any responsibility for actual site or soil conditions. It shall be Contractor's responsibility to determine for himself existing site and/or soil conditions.

PART 2 - PRODUCTS

2.01 EXCAVATION

- A. All excavation is unclassified. Complete all excavation regardless of the type, nature, or condition of the materials encountered.

2.02 SOURCE QUALITY CONTROL

- A. If tests for a material type fail three times, the Engineer may reject the source supplier and require the contractor to submit a new source for approval, at no additional cost to the Owner. The in-situ material is considered acceptable material and may be used, provided it meets the specified requirements.
- B. Quality control of the work shall be the Contractor's responsibility and Contractor shall make every effort to produce the best quality work as specified on the Drawings and in these Specifications.

2.03 STRUCTURAL FILL AND BACKFILL

- A. Fill and backfill under and around all structures shall be suitable on-site excavated material or approved imported material. Material shall be free of organic material, shall not have more than 10 percent by dry weight passing the U.S. Standard No. 200 sieve, and shall have no rocks larger than 3 inches in size. On-site Fine Sand (SP), without roots or other deleterious materials, is suitable material. Imported material may be provided by the Contractor at no additional cost to the Owner.
- B. On site soils with more than 10% by dry weight passing the U.S. Standard No. 200 sieve and/or particle sizes larger than 3 inches are not suitable for use as fill under pavements or structures.
- C. Backfill behind walls shall be as specified above except that they shall not have more than 4% by dry weight passing the U.S. Standard No. 200 sieve.

2.04 EARTHFILL

- A. On-site excavated material shall be free from roots, trash, and rocks larger than 3 inches.

2.05 WATER FOR COMPACTION

- A. Contractor shall furnish potable water, as required. Contractor may coordinate with Owner for water during construction. Contractor shall make application and pay all necessary deposits. Costs associated with the hydrant meter shall be paid for by the Contractor. Water trucks shall be used as required.

2.06 EQUIPMENT

- A. All equipment shall be suitable and adequate to perform the work specified. Compaction equipment shall be vibratory type. It is recommended that the contractor perform a preconstruction assessment of existing adjacent structures or utilities and monitor those structures or utilities for settlement during the construction period. Contractor shall notify Owner of any settlements that occur at existing adjacent structures.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Identify required lines, levels, contours, and datum locations. Protect bench marks, survey control points, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- B. Locate, identify, and protect utilities that remain from damage.

3.02 STRIPPING TOPSOIL

- A. Stripping of topsoil shall be performed prior to any cutting, excavation, removal and/or replacement or fill materials.
- B. Strip topsoil from entire site within boundaries of proposed construction lines to a depth of approximately 6" to 8.5". The top materials stripped shall be removed and disposed of off site, unless authorized for use on the site landscaping areas by the Engineer or Owner. Top materials shall not be used under replacement roadway or parking areas.
- C. Stripping of topsoil shall ensure that entire site is stripped and scraped clean of all brush, weeds, grass, roots, vegetation, etc.

3.03 CUTTING

- A. Except as otherwise specified, after stripping of topsoil all site areas which are above elevation required shall be cut to subgrades required by drawings.

3.04 FILLING

- A. Except as otherwise specified, after stripping of topsoil all site areas which are below elevation required shall be compacted as specified and then over such areas clean granular fill placed and compacted in layers not exceeding 12" in uncompacted thickness. Each layer of fill shall be compacted to at least 95% of the modified proctor maximum dry density (ASTM D1557). If handheld compaction equipment is used, the lift thickness should be reduced to 6 inches. Filling and compaction shall continue until subgrades required for various areas are reached. All holes and depressions caused from removal of trees, stumps, etc. shall be filled and compacted. Fill shall be good clean material as previously specified.

3.05 EXCAVATION UNDER STRUCTURES AND PAVEMENT AREAS

- A. Excavation shall be performed to elevations and dimensions required by drawings with suitable allowance made for construction operations and inspections. Excavation carried to depths below required elevations shall be replaced in loose layers a maximum of 6" in depth and compacted in a manner to achieve a minimum density of 98% as determined by a modified proctor in accordance with ASTM D-1557. Contractor may place additional concrete in lieu of replacing and compacting excess excavation as specified above to fill excess cut. Correction of excess cut shall be responsibility of Contractor at no additional cost to Owner.
- B. Roadways and driveways shall be saw cut when excavating under existing pavement. Roadway shoulder shall be restored or installed when excavating within one and a half feet of edge of pavement.
- C. Compact disturbed load bearing soil in direct contact with foundations to achieve a minimum density of 98% as determined by a modified proctor in accordance with ASTM D-1557.

- D. Verify that the specified density extends to 2 feet below the bottom of the structure or pavement base course to be installed.
- E. Slope banks with machine to angle of repose or provide necessary shoring.
- F. Do not interfere with 45 degree bearing splay of existing foundations without providing adequate means of shoring protection.
- G. Grade top perimeter of excavating to prevent surface water from draining into excavation.
- H. Notify Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- I. Correct areas over excavated in accordance with this section.
- J. Remove excavated material unsuitable for backfill from site.
- K. When muck or other deleterious materials is encountered in the excavation, it shall be completely removed within the area of the structure or pavement and to a depth where acceptable material is encountered. After removal of all muck or other deleterious material, the area shall be backfilled with approved fill material to the specified grade.

3.06 TRENCH EXCAVATION AND PREPARATION

- A. Excavation: Excavate as required for the installation of all piping, utilities, conduits, and appurtenances.
- B. Trench Width: Cut trenches sufficiently wide to enable installation, compaction and inspection.
- C. Grade: Excavate the bottom of the trench to the line and grade shown, or as established by the Engineer with proper allowance for pipe bedding.
- D. All trench work shall comply with the Trench Safety Act of 1990, with latest revisions.
- E. Piping shall be installed in a dry trench.
- F. When acceptable material is encountered in the trench, the bottom shall be excavated and graded to the depth required so as to provide a uniform and continuous bearing and support for the pipe on solid and undisturbed ground at every point between bell holes.
- G. Bell holes shall be provided at each joint to permit the joint to be made properly. At no time shall the bells support the pipe when in the trench.
- H. When unsuitable materials is encountered in the trench, it shall be completely removed for the width of the trench at the pipe and to a depth where acceptable material is encountered. After removal of all muck or other deleterious material, the trench shall be backfilled with bedding material to the bottom of pipe grade.

3.07 MAINTENANCE OF EXCAVATION

- A. The excavation shall be maintained at a dry condition at all times.
- B. All side slopes shall be such that material will not slide into the bottom of the excavation and any material doing so shall be immediately removed. Trench side slopes shall be in accordance with local codes, OSHA requirements, and the Trench Safety Act.

- C. All excavated material shall be piled in a manner that will not endanger the work and that will avoid obstructing sidewalks and driveways. Hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire and police call boxes, or other utility controls shall be left unobstructed and accessible until the work is completed.
- D. Trees, shrubbery, fences, poles, bollards and all other property and surface structures shall be protected unless their removal is shown on the drawings or authorized by the Engineer. When it is necessary to cut roots and tree branches, such cutting shall be done under the supervision and direction of the Engineer.

3.08 BACKFILL UNDER STRUCTURES AND PAVEMENT AREAS

- A. Backfilling of excavated areas under, around or over building and structural appurtenances and pavement, concrete or pavers shall be performed with clean fill materials which are free of debris, organics, trash or other deleterious substances. Suitable compaction equipment shall be used to obtain density described previously for entire depth of backfilling. Each layer of backfill under structures, pavements, and pavers shall be compacted to a minimum of 98% density as determined by a modified proctor in accordance with ASTM D-1557. Each layer of compacted backfill shall not exceed 12 inches in thickness. If hand-held compaction equipment is used, reduce the loose lift thickness to 6 inches. The completed, compacted surface shall be at the proper final subgrade elevation.
- B. Verify that the specified density extends to 12 inches below the bottom of the structure or pavement base course to be installed.

3.09 TRENCH BACKFILLING

- A. Haunch Backfill: Carefully place Pipe Bedding material so as not to damage the pipe in maximum 6-inch loose lifts and compact to the pipe centerline. Use hand-held compaction equipment.
- B. Pipe Zone: Backfill with Pipe Bedding material in maximum 12-inch loose lifts and compact to a point 12 inches above the pipe crown.
- C. Under Pavement/Concrete/Paver Areas, and Structures: In areas where backfill settlement must be held to a minimum, backfill above the pipe zone with Pipe bedding material in maximum 12-inch loose lifts and compact to a minimum 98% maximum dry density (ASTM D1557) up to the subgrade elevation.
- D. Outside Pavement/Concrete/Paver Areas: In areas where backfill settlement is not critical, backfill above the pipe zone with earthfill material to a density equal to or greater than the soil adjacent to the pipe trench, but not less than 90% of the maximum dry density (ASTM D1557), to final grade.
- E. No material shall be used for backfill which contains muck or other unsuitable material or material with an excessive void content. All backfill shall be composed of select clean granular material.
- F. All trenches and excavation shall be backfilled immediately after all pipe and joints have been investigated and approved by the Engineer or Utility Department, subject to satisfactory pressure and leakage test results, as required.
- G. Backfill, in general, shall be kept up with the rate of pipe laying. No more than 200 feet of pipe trench shall be open at one time at any one project location.

3.10 BACKFILL AROUND STRUCTURES

- A. Obtain Engineer's acceptance of concrete work and attained concrete strength prior to backfilling.
- B. Backfill with Structural Backfill material placed in maximum 12-inch loose lifts and compacted to a minimum 98% of maximum dry density (ASTM D 1557).
- C. Compact backfill adjacent to structures with equipment that will not damage the structure.
- D. Backfill with flowable fill or other material shall be only if reviewed and approved by the Engineer.

3.11 SITE GRADING

- A. Fill and contour site areas with earthfill material to elevations shown and as required to prepare the site for landscape grading and sodding.
- B. Place materials in maximum 12-inch loose lifts and compact as required to limit subsequent settlement.

3.12 COMPACTION TESTING

- A. In-situ compaction testing shall be performed by a certified laboratory.
- B. Compaction testing shall be done by nuclear density equipment or other approved methods. (ASTM D-2937, D-1557, D-2922)
- C. Density testing shall be performed as follows:
 - 1) Pipe Trenches: 1 test per lift per 200 feet of pipe.
 - 2) Fill Under/Around Structures: 1 test per lift under each structure or 1 backfill test per lift per drainage or sanitary structure installed.
 - 3) Fill Under Pavement Areas: 1 test per lift per 2,000 square feet of compacted surface area.
- D. Test results in a specific location are only representative of a larger area if the contractor has used consistent compaction means and methods and the soils are practically uniform throughout. If it is determined by the Owner/Engineer that there are variations in the compaction methods and/or soil uniformity, additional testing may be required.

3.13 FINAL AND FINISH GRADING

- A. Final grading shall be performed, and grades shaped to maintain the existing drainage patterns. Finish grades (top of the soil) shall be approximately 1-1/2" below edges of pathways, curbs and other paved or concrete slabs. After sod installation, the top of the sod shall be flush with the grade established by any adjacent paved or curbed surface.
- B. Upon project completion, all areas of site within immediate construction and adjacent areas shall be completely cleaned of all debris occasioned by this construction of this construction. Particular attention is called to any cement, mortar, masonry drippings and plaster which shall be completely removed from planting and lawn areas and shall be disposed of off site.
- C. All areas adjacent to site and all areas not within contract construction areas shall be left in reasonably same condition as they were found prior to commencement of construction.

- D. Any damage to the existing adjacent facilities including adjacent lakes or roads, and related areas such as, but not limited to, finish grades, slopes, grass sod, structures, pipe, etc. shall be repaired and restored to a proper and appropriate condition acceptable to the Owner and Engineer.

3.14 EXCESS MATERIAL

- A. Remove all excess suitable material from the site and dispose of at Contractor's expense.
- B. Unsuitable materials shall also be removed and disposed of off-site at Contractor's expense.

END OF SECTION

SECTION 09900 - PAINTING

PART 1 - GENERAL

1.01 SCOPE

- A. Furnish all labor, surface preparation and coating material, tools, rigging, lighting, ventilation, and other related items of equipment and materials necessary to clean, prepare, coat, cure, and cleanup a complete coating system on all interior and exterior exposed items and surfaces throughout the project, except as otherwise specified or shown on the drawings.
- B. Surface preparation, priming, and coats of paint specified are in addition to shop priming and surface treatment specified under other sections of the work.
- C. Painting to be in accordance with the following schedule of finishes.
 - 1) Piping and Equipment - Above grade, exterior and interior piping, well pumps, high service pumps, jockey pumps, and miscellaneous fabrication for exposure:
 - a. Primer: Spot prime all bare areas with 1 coat of Tnemec Series 91H2O Zinc Rich Urethane at a dry film thickness of 2.5 – 3.5 mils.
 - b. Stripe Coat: Tnemec Series N140 at a dry film thickness of 4.0 – 6.0 mils.
 - c. Intermediate Coat: Tnemec Series N140 at a dry film thickness of 4.0 - 6.0 mils.
 - d. Finish Coat: Tnemec Series N140 at a dry film thickness of 4.0 - 6.0 mils.
 - 2) Concrete and Masonry
 - a. Exterior (Concrete, Pipe supports, pedestals, etc.)
 - b. Scrape and remove all loose material before proceeding.
 - c. Remove all chalk, dirt, dust, loose cementitious coatings, mold, mildew, and other soluble contaminants by high pressure water cleaning (minimum 3500psi @ 3 to 5 gallons per minute, potable water). Sand must be mixed with the water or injected to prepare a suitable surface for coating. A cleaner such as TSP (tri-sodium phosphate) or similar should be used to help in cleaning.
 - d. Areas of efflorescence not removed by the high-pressure water will require scraping to remove to solid substrate.
 - e. Featheredge to tightly adhered coating.
 - f. All surfaces must be clean and dry prior to the application of any coatings.
 - g. Repair: Repair any cracks, damaged areas, and repair concrete, before proceeding. Tnemec Series 130 Enviro-Fill may be used to make cementitious repairs. Acrylic caulking may be used in the cracks to bring the surface to level. Let the caulking dry before top coating.
 - h. Finish Coat: Apply (2) coats of Tnemec Series 6 Tneme-Cryl acrylic emulsion at 2.0 – 3.0 mils dft per coat.

- 3) Interior of Ground Storage Tank
 - a. Scrape and remove all loose material before proceeding.
 - b. Remove all chalk, dirt, dust, loose cementitious coatings, mold, mildew, and other soluble contaminants by high pressure water cleaning (minimum 3500psi @ 3 to 5 gallons per minute, potable water). Sand must be mixed with the water or injected to prepare a suitable surface for coating. A cleaner such as TSP (tri-sodium phosphate) or similar should be used to help in cleaning.
 - c. Areas of efflorescence not removed by the high-pressure water will require scraping to remove to solid substrate.
 - d. Featheredge to tightly adhered coating.
 - e. All surfaces must be clean and dry prior to the application of any coatings.
 - f. Repair: Repair any cracks, damaged areas, and repair concrete, before proceeding. Tnemec Series 130 Enviro-Fill may be used to make cementitious repairs. Acrylic caulking may be used in the cracks to bring the surface to level. Let the caulking dry before top coating.
 - g. First Coat: Apply Tnemec Series 20HS-1211 Pota-Pox or equal; at 3-5 mils dft Spray and backroll this first coat.
 - h. Second Coat: Tnemec Series 20HS-color Pota-Pox or equal; at 5-7 mils dft.
 - i. Finish Coat: Tnemec Series 20HS-color Pota-Pox or equal; at 5-7 mils dft.
 - j. To meet the ANSI/NSF 61 standards the film thickness should not exceed 17 mils. 12 mils minimum
- D. The work includes field painting of exposed bare and covered pipes, hangers, exposed steel and iron work, tanks, and primed metal surfaces of equipment installed, except as otherwise indicated.
- E. Paint all exposed surfaces normally painted in the execution of a new project. Where items or surfaces are not specifically mentioned, or are not specifically excluded from the painting work, paint these the same as adjacent similar materials or areas.
- F. Clean, prepare, coat, and cure all surfaces in strict accordance with the manufacturer's published recommendations and specifications.
- G. Perform all work by the use of skilled workpersons in a safe and productive manner using equipment and procedures consistent with good coating practices.

1.02 PAINTING NOT INCLUDED

- A. The following categories of work are not included as part of the field-applied finish work or are included in other sections of these specifications.
 - 1) Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under the various sections for structural steel, miscellaneous metal, metal fabrications, hollow metal work, and similar items. Also, for fabricated components such as shop-fabricated or factory-built mechanical and electrical equipment or accessories.

- 2) Pre-Finished Items: Unless unit is part of an assembly to be painted to match, i.e. - motor, or otherwise shown or specified, do not include painting when factory-finishing or installer finishing is specified.
- 3) Concealed Surfaces: Unless otherwise shown or specified, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundation spaces, furred areas, utility tunnels, pipe spaces, duct shafts and elevator shafts. Painting of galvanized work that will be concealed in the completed work is not required. Do not paint structural steel to be encased in concrete, nor structural steel specified not to be painted elsewhere. Except for touch-up as specified in Part 3, painting of shop primed structural steel and ferrous metals that will be concealed in the completed work is not required.
- 4) Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze, and similar finished materials will not require finish painting, unless otherwise specified.
- 5) Operating Parts and Labels: Moving parts of operating units, mechanical and electrical parts such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts will not require finish painting unless otherwise specified.
 - a. Do not paint over any code-required labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.
- 6) Other Surfaces: Do not paint sprinkler heads, fire detection heads, integrally colored stucco, brick masonry, cast stone, stone masonry, or architectural precast concrete, unless otherwise specified.

1.03 RELATED SECTIONS SPECIFIED ELSEWHERE

- A. Section 01300 - Submittals

1.04 REFERENCES

- A. ANSI/ASTM D16 - Definitions of terms relating to paint, varnish, lacquer, and related products.
- B. ASTM D2016 - Test method for moisture content of wood.
- C. Steel Structures Painting Council (SSPC).

1.05 DEFINITIONS

- A. Conform to ANSI/ASTM D16 for interpretation of terms used in this section.

1.06 QUALITY ASSURANCE

- A. Furnish all coating materials by a single manufacturer. Solvent, thinners, and other miscellaneous materials can be supplied by the same manufacturer or by a supplier approved by the manufacturer.
- B. Furnish a statement to the Engineer from the coatings manufacturer that materials to be used by the Contractor comply with the manufacturer's recommendations.
- C. The Engineer reserves the right to require qualification of the product manufacturer and applicator, including satisfactory completion of at least two (2) projects of this nature.

- D. Manufacturer's Inspection Meeting: After set-up for painting but before commencing work, conduct a meeting at the site among representatives of the paint manufacturer, contractor, painting contractor, and Engineer to inspect the facility and review procedures recommended by the manufacturer for the prevailing conditions.

1.07 REGULATORY REQUIREMENTS

- A. Comply with all federal, state, and local health and fire regulations when handling and applying paint and coating products.

1.08 SUBMITTALS

- A. Manufacturer's Data: Submit manufacturer's technical information including paint label analysis, surface preparation and application instructions for each material proposed for use. Indicate the surfaces to which each material is to be applied.
- B. Samples; Painting: Submit samples for Engineer's review of color and texture only. Provide a listing of material and application for each coat of each finish sample.
- C. Manufacturer's Certificate: Submit a written certification from the paint manufacturer that materials furnished for the work meet or exceed specified requirements.
- D. Coating Schedule: submit a schedule for all coating and painting

1.09 PRODUCT DELIVERY AND STORAGE

- A. Store paint materials and painting tools and equipment, including solvents and cleaning material, in a well ventilated, dry area away from high heat. Do not store in buildings or structures in use or being constructed, nor leave overnight therein. Follow manufacturer's recommendations for the safe storage of paints and solvents.
- B. Take precautions to prevent fire hazards and spontaneous combustion.

1.10 SAFETY

- A. Make all necessary provisions regarding materials, equipment, personnel, procedures, and practices, to assure that the work is done safely and that the working area is maintained free of all health and safety hazards.
- B. Observe manufacturer's health and safety precautions when storing, handling, and applying coating materials and cleanup materials containing solvents and/or chemical ingredients.
- C. Direct personnel's attention to all product warnings and information given on the labels of all products.
- D. Ensure that personnel mixing and applying coating materials are equipped with adequate protective clothing and devices (including respirators).
- E. Permit no smoking in the working area.
- F. Permit no item which may produce sparks or open flames in the immediate working area.
- G. Post warning signs outside of the work to apprise personnel of the hazards in the area. Erect barriers where necessary.

- H. Return partially used coating materials that are to be retained to their original containers at the completion of each workday. Tightly reseal containers, wipe material spills, clean and return the containers to the designated storage area.
- I. Remove waste coating materials and contaminated disposable items from the job site and dispose of them at the completion of each workday. Dispose of all items and materials in strict accordance with local, state, and federal regulations.

1.11 JOB CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 50 degrees F and 90 degrees F unless otherwise permitted by the paint manufacturers printed instructions.
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 45 degrees F and 95 degrees F unless otherwise permitted by the paint manufacturers printed instructions.
- C. Do not apply paint in rain, fog or mist; or when the relative humidity exceeds 85%; or to damp or wet surfaces, unless otherwise permitted by the paint manufacturer's printed instructions.
- D. Painting may be continued during inclement weather only if the areas and surfaces to be painted are enclosed and heated within the temperature limits specified by the paint manufacturer during application and drying periods.
- E. Exercise caution when attempting to paint in windy conditions. The Contractor is responsible for all damage caused by wind blown paint.

PART 2 - PRODUCTS

2.01 COLORS AND FINISHES

- A. Paint colors, surface treatments, gloss, and finishes shall match the Owner's existing scheme.
- B. Final acceptance of colors will be from samples applied on the job.
- C. Paint Coordination: Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Furnish information to manufacturer's, fabricators, suppliers, and others where necessary on the characteristics of the finish materials to be used, to ensure compatible prime coats are used. Provide barrier coats over incompatible primers or remove and re-prime as required.

2.02 UNDERCOATS AND THINNERS

- A. Undercoats: Provide undercoat paint produced by the same manufacturer as the finish coats.
- B. Thinners: Use only thinners approved by the paint manufacturer and use only within recommended limits.

2.03 ACCEPTABLE MANUFACTURER'S

- A. All coatings to be in contact with potable water must appear on the current Florida Department of Environmental Protection list of approved paint and protective coatings and be rated NSF approved for potable water.

2.04 PAINTING SYSTEMS

- A. Provide a minimum dry film thickness, noted as D.F.T., for the applications listed in the schedule of finishes.
- B. All coatings to be in contact with potable water must appear on the current Florida Department of Environmental Protection list of approved paint and protective coatings and to be rated NSF approved for potable water.
- C. Touch-up shop-applied and field applied prime coats wherever damaged or bare and keep touched-up as necessary before and after installation or erection of the items, to maintain protection of the metal from rust and corrosion. Clean and touch-up with the same type of primer as initially used.
- D. Color for all surfaces in contact with potable water to be white or ivory to conform to State of Florida, EPA, and FDA Regulations for contact with potable water.

2.05 SCHEDULE OF FINISHES

- A. As specified in the project drawings.

2.06 SCHEDULE OF COLORS:

- A. These colors are provided for painting of piping, which has modified and furnished and installed. Not all piping listed may require painting.
- B. Liquid Piping:
 - 1) Acid - safety red
 - 2) Air - safety orange
 - 3) Ammonia - light green
 - 4) Chlorine-safety yellow
 - 5) Permeate and permeate service water - medium blue, to match existing
 - 6) Filtered water – light blue (to match existing)
 - 7) Potable water (finished) - safety blue
 - 8) Scale Inhibitor -green
 - 9) Caustic - black
 - 10) Membrane cleaning solution - orange
 - 11) Wastewater and Drains – dark Grey
 - 12) Concentrate - brown
 - 13) Raw Water - olive green, to match existing
 - 14) Pretreated Feedwater – No painting

PART 3 - EXECUTION

3.01 FIELD OBSERVATION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer. Do not paint over conditions detrimental to the formation of a durable paint bond and film.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application. Do not proceed with the work until unsatisfactory conditions have been corrected.
- C. Provide all necessary equipment, labor, rigging, lighting and other equipment to facilitate inspections.
- D. The Engineer may inspect the Work at any time for compliance with the requirements of the specifications.
- E. The Engineer reserves the right to approve each phase of the Work before further work is done, to halt all Work deemed to be improper or not in compliance with the specification, and to require the Contractor to promptly correct all improper practices or deficient Work.
- F. The Contractor is responsible for any expenses incurred in association with corrective measures required as the result of improper practices and/or defective or deficient work.

3.02 GENERAL REQUIREMENTS

- A. Provide adequate explosion - proof lighting sufficient to illuminate clearly the working area without shadows during all surface preparation and coating operations.
- B. Maintain adequate and continuous explosion - proof ventilation in confined areas during all surface preparation and coating operations and during all recoat and curing periods. Provide ventilation of sufficient capacity to maintain a clear atmosphere that is well below explosive and toxic limits. Arrange the ventilation system, including all fans and temporary duct work, so that no still air spaces exist in any area.
- C. Heating devices used to create and/or maintain temperature conditions in compliance with the specification requirements are to be explosion proof and of the type that do not exhaust sooty or oily residues or any other contaminants into the air. Heating devices are not to be used when existing temperature and humidity conditions may create dew point conditions.
- D. Use equipment that is explosion proof and non-sparking. Spray equipment must be recommended by or acceptable to the coatings manufacturer.
- E. Apply caulking material only after the last coat of paint has been applied and has dried hard. Caulking material used must be of a type that is compatible with the specified coating system.

3.03 SURFACE PREPARATION

- A. Perform preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as herein specified, for each particular substrate conditions.
- B. Surface preparation shall be conducted to prevent material from contaminating the existing water treatment process.
- C. Fiberglass and PVC materials shall be solvent cleaned according to SSPC-SP1 and scarified by best practical means. Every precaution should be taken to ensure that NO

sanding dust is drawn into the degasifiers. Painting contractor to furnish all necessary barrier, drapes, etc. to prevent contamination of the Finish Water.

3.04 MATERIAL PREPARATION

- A. Mix and prepare painting materials in accordance with manufacturer's direction.
- B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.
- C. Stir materials before application to produce a mixture of uniform density and stir as required during the application of the materials. Do not stir surface film into the materials. Remove the film and if necessary, strain the material before using.

3.05 APPLICATION

- A. General
 - 1) Conform to articles "General Requirements" and "Surface Preparation" prior to beginning coating application.
 - 2) Apply paint as specified and in accordance with the manufacturer's printed instructions. Unless otherwise recommended in the manufacturer's printed instructions or specified elsewhere (e.g. Bid Form, Painting System) use brushes for applying first coat on wood and use standard industrial spray equipment, either airless or conventional for applying first coat on metals other than sheetmetal and items fabricated from sheet metal. For other coats on wood, metal, and other substrates, use applicators and techniques best suited for the type of material being applied.
 - 3) Apply additional coats when undercoats, stains or other conditions show through the final coat of paint, until the paint film is of uniform finish, color, and appearance. Give special attention to ensure that all surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 - 4) Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces.
 - 5) Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment.
 - 6) Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint.
 - 7) Paint the back sides of access panels, and removable or hinged covers to match the exposed surfaces.
 - 8) Finish exterior doors on tops, bottoms and side edges the same as the exterior faces, unless otherwise indicated or specified.
 - 9) Sand lightly between each succeeding enamel or varnish coat.
 - 10) Omit the field prime coat on shop-primed and touch-up painted metal surfaces which are not to be finish painted and which will not be exposed to view in the completed work. Do not omit primer on metal surfaces specified to be finish coated or on metal surfaces that will be exposed to view in the completed work.

- 11) Putty nail holes and joints after prime coat is dry.
- 12) Change colors at corner of stop where colors differ between adjoining rooms or spaces and where door frames match wall colors.
- 13) Provide a finished coating system free of all runs, sags, cracks, blisters, pinholes, excessive or deficient fill thickness, or any other defects. Correct any such deficiencies by proper removal of the defect and/or recoating.
- 14) Apply the first-coat material to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration. Sandblasted surfaces are not to be left uncoated overnight.
- 15) Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.
- 16) Provide minor tinting to each coat of paint in order to differentiate between coats.

B. Minimum Coating Thickness

- 1) Apply each material at not less than the manufacturer's recommended spreading rate, to establish a total dry film thickness as specified or, if not specified, as recommended by the coating manufacturer.

C. Painting of Mechanical and Electrical Work

- 1) Limit painting of mechanical and electrical work to those items exposed in equipment rooms and occupied spaces, and on the exterior of buildings or structures.
- 2) Mechanical items to be painted include, but are not limited to, the following:
 - a. Piping, pipe hangers, and supports
 - b. Heat exchangers
 - c. Tanks
 - d. Ductwork and insulation
 - e. Motor mechanical equipment and supports
 - f. Accessory items

D. Prime Coats

- 1) Apply a prime coat of material, which is required to be painted or finished, and which has not been prime coated by others.
- 2) Clean and prime unprimed ferrous metals as soon as possible after delivery of the metals to the job site.
- 3) Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.

- E. Completed Work
 - 1) Match approved samples for color, texture, and coverage.
 - 2) Remove, refinish, or repaint work not in compliance with specified requirements.
- F. Dry Film Gauge
 - 1) Provide "Noroson Magnetic Dry Film Thickness Gauge" as supplied by the coatings manufacturer.

3.06 CLEAN-UP AND PROTECTION

- A. Clean-up
 - 1) During the progress of the work, remove from the site all discarded paint materials, rubbish, cans and rags at the end of each workday.
 - 2) Upon completion of painting work, clean window glass and other paint - spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or damage finished surfaces.
- B. Protection
 - 1) Protect open water holding tanks and basins of the existing water treatment plant.
 - 2) Protect work of other trades, whether to be painted or not, against damage from painting and finishing work.
 - 3) Protect surfaces that might otherwise be damaged by dripping, splashing, or spraying of paint. Correct any damage by cleaning, repairing, or replacing and repainting as acceptable to the Engineer.
 - 4) Provide "Wet Paint" signs as required to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after the completion of paint operations.
 - 5) At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.
 - 6) Repair of damage caused by overspray is the contractor's responsibility.

3.07 WARRANTY

- A. If within one year after the date of Substantial Completion, any Work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER'S written instructions, either correct such defective Work, or, if it has been rejected by OWNER, remove it from the site and replace it with non-defective Work. If CONTRACTOR does not promptly comply with terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, will be charged to the CONTRACTOR.

END OF SECTION

SECTION 13300-PROCESS INSTRUMENTATION AND CONTROL SYSTEM MODIFICATIONS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Work includes engineering, furnishing, installing, testing, documenting, and placing in operation modifications to the existing Process Instrumentation and Control System (PICS) at the City of Wildwood (OWNER), Florida's Ashley Water Treatment Plant (WTP) necessary to fully integrate the new well and chemical feed pump. This includes appropriate revisions to the OWNER's existing Supervisory Control and Data Acquisition (SCADA) system.
- B. As suppliers of the existing PICS, all work covered by this specification shall be performed by Unitron Controls, Lakeland, Florida henceforth referred to as the SYSTEM SUPPLIER.
- C. The SYSTEM SUPPLIER shall provide all equipment, materials, programming, software, modifications to existing equipment, calibrations and services that are required to successfully interface and interconnect the PICS and any other control systems and associated equipment that are specified or designated in any drawings or provisions of these specifications for the purpose of providing a fully integrated and functional control system.
- D. The SYSTEM SUPPLIER may duplicate software logic code and database and graphics applications, as required, while still meeting the functional specifications. The ENGINEER may require modifications to the submitted graphics, reports and control logic without change to the contract price. All engineering development required by the SYSTEM SUPPLIER will be in accordance with the Conditions of this Contract.
- E. It is the intent of these Contract Documents that the SYSTEM SUPPLIER be retained by the CONTRACTOR to have overall responsibility for designing, furnishing, interfacing, adjusting, testing, documenting, and starting-up the various PICS equipment described in the Contract Documents. The specified intent is that the SYSTEM SUPPLIER will have overall responsibility for making sure the various systems, trades, suppliers, vendors, subcontractors, etc. come together as a complete coordinated system which will reliably perform the specified functions.
- F. The CONTRACTOR shall ensure that the SYSTEM SUPPLIER coordinates closely with suppliers of other specialty equipment to ensure the required inputs and outputs for the PICS are available.
- G. Instrumentation and control systems for this project are intended to be supplied completely under this section. All control panels shall be supplied through the SYSTEM SUPPLIER; however, some special control panels and devices specifically called out in other specification sections are to be part of those sections, furnished with that equipment. The instruments and controls shall, however, be furnished in conformance to and in coordination with, this section.
- H. Division of Work. It is the ultimate responsibility of the CONTRACTOR to furnish a complete and fully operable PICS that reliably performs the specified functions. The CONTRACTOR is to assume full responsibility for additional costs which may result from unauthorized deviations from the specifications. The CONTRACTOR is to establish the actual division of work with the minimum requirements as specified herein.

- I. The SYSTEM SUPPLIER shall be responsible for:
- 1) The integration of the system including the PLC networking, computer system network, panel layouts and wiring, PLC programming, network communications programming, and computer system application software setup.
 - 2) All application software configuration including all operator interface screens, reports, and database(s).
 - 3) All hardware and software submittals. The SYSTEM SUPPLIER shall develop the panel shop drawings, wiring diagrams, plumbing diagrams, PLC and computer hardware configuration drawings and layouts, software documentation, and all other submittals defined herein and in the specification sections identified in paragraph 1.01B hereof. Coordination with the CONTRACTOR and other subcontractors shall be the responsibility of the SYSTEM SUPPLIER.
 - 4) The final system operation and reliability. All required tests and training shall be under the on-site supervision of the SYSTEM SUPPLIER.
 - 5) Ordering, fabrication, assembly, delivery, and start-up of the PICS.
 - 6) Obtaining from the CONTRACTOR the required information on those field elements, equipment starters, valve actuators, chemical feed equipment, local control panels, and other control equipment or devices that are required to be interfaced with, but that are not provided with the PICS to provide full system coordination regarding interface, function, testing, and adjustment requirements.
 - 7) Providing accessory devices including furnishing and installation of networking interface cards, interposing relays, control switches and signal converters necessary to perform the intent as described by the control strategies and services necessary to achieve a fully integrated and operational system as shown on the Contract Drawings and defined in the Specifications.
 - 8) Coordinating all interface requirements with mechanical and electrical system suppliers and furnishing any signal isolation devices that might be required to insure compatibility between all equipment.
 - 9) Providing any special manufacturer's cables required.
 - 10) Defining the final installation and connection requirements of the PICS at the jobsite through development of interconnection diagrams.
 - 11) Verifying correctness of all final power and signal connections to the PICS. The SYSTEM SUPPLIER shall make final adjustments to and calibrate all field elements provided with the PICS.
 - 12) Verifying that:
 - a. All components provided under this section are properly installed.
 - b. The proper type, size, and number of control wires with their conduits and junction boxes are provided and installed.
 - c. Proper electric power circuits are provided for all components and systems.

- J. The CONTRACTOR shall be responsible for:
- 1) Including within the electrical subcontractor's scope:
 - a. Provision, installation and termination of field and power wiring to PICS supplied control panels and field elements. Termination shall be made in accordance with final accepted interconnection diagrams developed by the SYSTEM SUPPLIER. The electrical subcontractor shall mark on the interconnect diagram the field wire numbers used for each termination point. The SYSTEM SUPPLIER shall finalize the interconnect diagrams by including these field wire numbers in the final as built version.
 - b. Installation and termination of all specialty cables furnished by the SYSTEM SUPPLIER.
 - 2) Including within the mechanical subcontractor's scope installation of any in-line instrumentation. Installation shall be made in accordance with the manufacturer's recommendations and under the direction of the SYSTEM SUPPLIER.
 - 3) Equipment storage and protection until installed following the storage and handling instructions recommended by the SYSTEM SUPPLIER. Anti-static and winterization requirements shall be per the SYSTEM SUPPLIER's instructions and the SYSTEM SUPPLIER shall periodically verify that these instructions are followed.
 - 4) Incorporating all necessary components into the system. Schedules included in the referenced specification sections do not necessarily indicate the complete component requirements of the PICS.
 - 5) Ensuring that the SYSTEM SUPPLIER coordinates work with other Divisions and Sections of the Specifications.
 - 6) Requiring the SYSTEM SUPPLIER to observe and advise on the installation of equipment furnished by SYSTEM SUPPLIER and installed by CONTRACTOR to the extent required to certify, with the operational check-out tests, that the equipment will perform as required.
 - 7) Ensuring that information on equipment provided under other Divisions and needed by the SYSTEM SUPPLIER to coordinate the PICS is provided in a timely manner.
- K. Equipment found to be defective prior to system acceptance shall be replaced and installed at no additional cost to the OWNER.
- L. In the bid price, the SYSTEM SUPPLIER shall provide for obtaining the services of authorized field personnel from the manufacturers of specialty instruments and from the suppliers of application software packages as necessary. Should these personnel be required during installation, start-up and checkout of the respective portions of the PICS, such services shall be provided at no additional cost to the OWNER.

1.02 SYSTEM DESCRIPTION

- A. The existing PICS comprises a stand-alone Process Control Panel (PCP) located in the WTP Electrical Room. The PCP contains a Sci-Text PLC, henceforth referred to as PLC-1,

which monitors and controls the existing plant processes and connects with the OWNER's existing SCADA system via a cellular wireless communication network.

- B. The new well and chemical feed pumps shall be connected to existing pre-assigned PLC I/O.

1.03 SUBMITTALS

- A. Furnish, as prescribed under the General Requirements, all required submittals covering the items included under this section and its associated sections of the work.
- B. Submit complete, neat, orderly, and indexed submittal packages. Handwritten diagrams are not acceptable, and all documentation submittals shall be made using CADD generated utilities.
- C. Partial submittals or submittals that do not contain sufficient information for complete review or are unclear will not be reviewed and will be returned by the Engineer as not approved.
- D. All submitted component data sheets shall be marked to specifically identify the model/part numbers to be furnished.
- E. Provide all shop drawing submittals on thumb drive in PDF format.
- F. Field Acceptance Test Plan. This submittal shall define the steps to be conducted during the required witnessed acceptance testing. The test shall be conducted in accordance with the general requirements set forth in Part 3 hereof. The submitted plan shall meet the following requirements:
 - 1) Each of the equipment covered in the system performance submittal shall be tested.
 - 2) For each equipment test, the required operator control actions and system response shall be demonstrated on the complete system, including each operator action, the response and appropriate HMI display/alarm updates.
- G. The Contractor and System Supplier are hereby specifically advised that the above submittal shall be Approved or Approved as Noted prior to any witnessed performance testing.
- H. Test Procedures: Submit the procedures proposed to be followed during all required testing. Procedures shall include test descriptions, forms, and check lists to be used to control and document the required tests.
- I. Test Reports: Upon completion of each required test, document the test by submitting a copy of the signed off test procedures to the Engineer.

1.04 QUALITY CONTROL

- A. The SYSTEM SUPPLIER shall meet all of the requirements of these specifications, and, unless specifically stated otherwise, no prior acceptance of any subsystem, equipment, or materials has been made.
- B. All equipment furnished by the SYSTEM SUPPLIER shall be of the latest and most recent design and shall have overall accuracy as guaranteed by the manufacturer.

- C. Materials and equipment used shall be U.L. approved wherever such approved equipment and materials are available.
- D. Component equipment shall be as supplied by one of the manufacturers named in the individual specification sections or approved equal. The design of the PICS is based on the first-named manufacturer's equipment if there is a difference.
- E. To facilitate the OWNER's operation and maintenance, products shall be of the same major manufacturer, with panel mounted devices of the same type and model as far as possible.
- F. To ensure the interchangeability of parts, the maintenance of quality, the ease of interfacing between the various subsystems, and the establishment of minimums with regard to ranges and accuracy, strict compliance with the above requirements shall be maintained.
- G. The SYSTEM SUPPLIER shall designate a single point of contact for interface with the ENGINEER on this project. The ENGINEER reserves the sole right to approve or reject this point of contact.
- H. The SYSTEM SUPPLIER's selected project personnel shall meet the following requirements:
 - 1) Project engineer shall have at least 10 years' experience in installing similar systems and shall have a minimum of secondary education in the field of electronics or similar technical discipline.
 - 2) Project technician assisting the project engineer for field element calibration and check out shall have at least five years of experience in installing similar systems.
 - 3) Key staff resumes shall be submitted for ENGINEER's approval with the Project Plan as further detailed under submittals.
- I. Service Facility: The SYSTEM SUPPLIER shall have an established service facility from which qualified technical service personnel and parts may be dispatched upon call. Such a service facility shall be no more than six (6) hours travel time from the jobsite.
- J. The SYSTEM SUPPLIER shall provide experienced personnel on-site to coordinate and/or perform installation, termination, and adjustment; on-site testing; OWNER training; and startup assistance for the PICS.
- K. The SYSTEM SUPPLIER shall provide, on-site, an experienced project engineer to supervise and coordinate all on-site PICS activities. An experienced technician may be provided to assist the project engineer in field element installation, field calibration, and checkout tests. The SYSTEM SUPPLIER's project engineer shall be on-site during the period required to affect all critical on-site activities related to the PICS, particularly the software debugging, PICS training, and witnessed testing activities.

1.05 STANDARDS

- A. The design, testing, assembly, and methods of installation of the wiring materials, electrical equipment and accessories proposed under this Contract shall conform to the National Electrical Code and to applicable state and local requirements. UL listing and labeling shall be adhered to under this Contract.
- B. Any equipment that does not have a UL, FM CSA, or other approved testing laboratory label shall be furnished with a notarized letter signed by the supplier stating that the

equipment furnished has been manufactured in accordance with the National Electric Code and OSHA requirements.

- C. Any additional work needed resulting from any deviation from codes or local requirements shall be at no additional cost to the OWNER.
- D. International Society of Automation (ISA) and National Electrical Manufacturers Association (NEMA) standards shall be used where applicable in the design of the PICS.
- E. All equipment used on this project to test and calibrate the installed equipment shall be in calibration at the time of use. Calibration shall be traceable to National Institute of Standards (NIS - formally NBS) calibration standards.
- F. For the purposes of uniformity and conformance to industry standard, provide analog signal transmission modes of electronic 4-20 ma DC. No other signal characteristics are acceptable.
- G. Discrete signals are two-state logic signals. Use 120V ac sources on all discrete signals unless otherwise noted or shown.
- H. Provide appropriately sized electrical transient protection devices for all electrical elements of the system as further defined in the individual specification sections. For field mounted devices, provide protector enclosures to the electrical Subcontractor for mounting and installation.

1.06 WARRANTY AND GUARANTEE

- A. In accordance with Division 1, the SYSTEM SUPPLIER shall furnish to the OWNER a written guarantee commencing with final acceptance, that all equipment and parts thereof, material and/or workmanship for the field elements, instruments, and control panels are of top quality and free from defects.
- B. The SYSTEM SUPPLIER shall guarantee all equipment whether or not of his own manufacture.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PRODUCT HANDLING

- A. Store and protect equipment until installation following the storage and handling instructions recommended by the equipment manufacturers. Place special emphasis on proper anti-static protection of sensitive equipment.
- B. Protection During Construction: Throughout this Contract, provide protection for materials and equipment against loss or damage and from the effects of weather. Prior to installation, store items in indoor, dry locations. Provide heating in storage areas for items subject to corrosion under damp conditions. Provide covers for panels and other elements that may be exposed to dusty construction environments. Specific storage requirements shall be in accordance with the SYSTEM SUPPLIER's recommendations.
- C. Corrosion Protection: Protect all consoles, panels, enclosures, and other equipment containing electrical or instrumentation and control devices, including spare parts, from corrosion using corrosion-inhibiting vapor capsules. Prior to shipment, include capsules in the shipping containers, and equipment as recommended by the capsule manufacturer.

During the construction period, periodically replace the capsules in accordance with the capsule manufacturer's recommendations. Replace all capsules just prior to Final Acceptance.

- D. ESD Protection: Provide for the proper handling, storage, and environmental conditions required for the PICS components deemed static sensitive by the equipment manufacturer. Utilize anti-stat wrist straps and matting during installation of these items to prevent component degradation. Flooring used in control areas shall be reviewed and approved by the SYSTEM SUPPLIER.
- E. Adequately pack manufactured material to prevent damage during shipping, handling, storage, and erection. Pack all material shipped to the project site in a container properly marked for identification. Use blocks and padding to prevent movement.
- F. Ship materials that must be handled with the aid of mechanical tools in wood-framed crates.
- G. Ship all materials to the project site with at least one layer of plastic wrapping or other approved means to make it weatherproof. Anti-stat protection shall be provided for all sensitive equipment.
- H. Inspect the material prior to removing it from the carrier. Do not unwrap equipment until it is ready to be installed. If any damage is observed, immediately notify the carrier so that a claim can be made. If no such notice is given, the material shall be assumed to be in undamaged condition, and any subsequent damage that is discovered shall be repaired and replaced at no additional expense to the OWNER.
- I. The CONTRACTOR shall be responsible for any damage charges resulting from the handling of the materials.

3.02 INSTALLATION

- A. Material and Equipment Installation: Install the PICS in locations indicated on the Drawings and follow manufacturers' installation instructions explicitly, unless otherwise indicated. Wherever any conflict arises between manufacturers' instruction and these Contract Documents, follow ENGINEER's decision, at no additional cost. Always keep copy of manufacturers' instructions on the jobsite available for review.
- B. Install materials and equipment in a workmanlike manner utilizing craftsmen skilled in the particular trade. Provide work which has a neat and finished appearance. Coordinate I&C work with the OWNER and work of other trades to avoid conflicts, errors, delays, and unnecessary interference with operation of the existing plant during construction.
- C. Provide finish on instruments and accessories that protects against corrosion by the elements in the environment in which they are to be installed. Finish both the interior and exterior of enclosures. Provide extra paint of each color used in the material from the manufacturer for touch-up purposes.
- D. Equipment Finish: Provide materials and equipment with manufacturer's standard finish system. Provide manufacturer's standard finish color, except where specific color is indicated. If manufacturer has no standard color, finish equipment with light gray color.
- E. Cleaning and Touch-up Painting: Keep the premises free from accumulation of waste material or rubbish. Upon completion of work, remove materials, scraps, and debris from premises and from interior and exterior of all devices and equipment. Touch-up scratches, scrapes, or chips in interior and exterior surfaces of devices and equipment with finishes

matching as nearly as possible the type, color, consistency, and type of surface of the original finish. Clean and polish the exterior of all panels and enclosures upon the completion of the demonstration tests.

- F. Control Valves: Verify correctness of installation. Verify calibration and adjustment of all positioners and I/P transducers and verify correct control action. Verify position switch settings. Verify opening and closing speeds and travel stops.

3.03 SYSTEM SOFTWARE MODIFICATIONS

- A. Modify the existing plant overview OIT screen to indicate the status of the new well and chemical feed pump.
- B. Modify the existing chemical feed pump control strategy to incorporate new chemical feed pump.
- C. Add new/modified OIT screens for the new well and chemical feed pump.
- D. Modify the PICS database to incorporate the new equipment.
- E. Modify the existing SCADA master HMI application to accommodate all of the software modifications.

3.04 TESTING – GENERAL

- A. All elements of the PICS, both hardware and software, shall be tested to demonstrate that the total system satisfies all of the requirements of the Contract Documents
- B. As a minimum, the testing shall include shop tests, operational check-out tests, and Demonstration Tests.
- C. Each test shall be in the cause-and-effect format. The person conducting the test shall initiate an input (cause) and, upon the system producing the correct result (effect), the specific test requirements will have been satisfied.
- D. All tests shall be conducted in accordance with, and documented on, prior approved procedures, forms, and checklists. Each specific test to be performed shall be described and a space provided after it for signoff by the appropriate party after its satisfactory completion. Copies of these signoff test procedures, forms, and checklists will constitute the required test documentation.
- E. Provide all special testing materials and equipment. Wherever possible, perform tests using actual process variables, equipment, and data. Where it is not practical to test with real process variables, equipment, and data, provide suitable means of simulation. Define these simulation techniques in the test procedures.
- F. The SYSTEM SUPPLIER shall coordinate all of their testing with the CONTRACTOR, the ENGINEER, all affected suppliers, and the OWNER.
- G. The ENGINEER reserves the right to test or retest any and all specified functions whether or not explicitly stated in the approved test procedures. The ENGINEER's decision shall be final regarding the acceptability and completeness of all testing.

3.05 FIELD ACCEPTANCE TEST (FAT)

- A. The SYSTEM SUPPLIER, in coordination with the FCP supplier shall perform a witnessed Field Acceptance Test (FAT) on the complete PICS. The FAT shall demonstrate that the PICS is operating and in compliance with the Contract requirements. Each specified function shall be demonstrated on a paragraph-by-paragraph, and site-by-site basis.
- B. Prior to the FAT, the entire installed PICS shall be certified in writing by the CONTRACTOR that it is ready for operation.
- C. The system shall operate for a continuous 100 hours without failure before this test will be considered successful.
- D. The FAT shall cover the entire PICS, including control functions, alarms, and status monitoring. Test procedures used for factory tests may be adopted for these tests if modified as required.

END OF SECTION

SECTION 13310 - PROCESS INSTRUMENTATION AND CONTROL SYSTEMFIELD INSTRUMENTS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. This Specification Section covers work related to the various field instruments to be supplied with the Process Instrumentation and Control System (PICS).
- B. Field instrumentation, as specified herein, shall be furnished by the same SYSTEM SUPPLIER furnishing services and equipment as outlined in 13100.

1.02 RELATED WORK

- A. Specification Section 13300 defines work associated with the overall PICS.
- B. Physical Installation of field instruments is performed under Division 15, Mechanical.
- C. Provision of all field and power wiring, except manufacturer-supplied cables, and installation of all wiring is performed under Division 16, Electrical.

1.03 SUBMITTALS

- A. Submit the following Field Instrumentation Shop Drawings in a single package:
 - 1) Catalog information, descriptive literature, wiring diagrams, and shop drawings on all components of the field instruments, including all miscellaneous electrical and mechanical devices furnished under this section.
 - 2) Individual data sheets for all components of the field instruments to supplement the above information by citing all specific features for each specific component (e.g. scale range, materials of construction, special options included, etc.). Each component data sheet shall bear the component name and instrument tag number designation shown in the Drawings and Specifications.
 - 3) Installation details for all field mounted devices to show conformance with the Contract Documents.
 - 4) Configuration documentation for all programmable devices to indicate actual settings used to set the device scale, range, trip points, and other control parameters.
 - 5) Proposed tag numbers for each specific instrument.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Equipment to be installed in a hazardous area shall meet Class, Group, and Division classification as shown on the Contract Electrical Drawings, or comply with the local or National Electrical Code, whichever is the most stringent requirement.
- B. All instruments requiring plumbing shall utilize stainless steel components as follows:
 - 1) Test Tap: Shall consist of Crawford Fitting Co. Swagelock quick connects Series QC4-DE, or equal.

- 2) Tubing, Stainless Steel: Shall be ASTM A 312, TP 316, seamless, soft annealed with 0.065-inch wall. Fittings shall be ASTM A 276, TP 316 compression or socket weld type.
 - 3) Valve, Ball: Shall be stainless steel ball valves, Whitey Series 40, Hoke Flamite Series 7100, or equal.
- C. All instruments shall be provided with mounting hardware and floor stands, wall brackets, or instrument racks.
 - D. All transmitters shall be provided with either integral indicators or conduit mounted indicators in process units, accurate to two percent. Indicator readouts shall be linear in process units.
 - E. Electronic equipment shall utilize printed circuitry suitably coated to prevent contamination by dust, moisture, and fungus. Solid-state components shall be conservatively rated for their purpose, to assure optimum long-term performance and dependability over ambient atmosphere fluctuations and 0 to 100 percent relative humidity. The field mounted equipment and system components shall be designed for installation in dusty, humid, and slightly corrosive service conditions.

2.02 LIGHTNING/SURGE PROTECTION

- A. Surge suppressors and arrestors meeting the requirements of IEEE/ANSI Standard C-62.41 (latest revision) shall be provided on all electronic field instruments.
- B. AC Powered Instruments. Lightning and surge protection shall be provided on both the AC power supply and signal lines. The instrument, a breaker and the surge suppressor shall be mounted on a ½-inch aluminum plate equipped with 1/8-inch sun shields on top and both sides with front panel facing north wherever practical. The mounting plate shall be connected to a ground rod via a #10-gauge wire. The protectors shall meet the following criteria:
 - 1) NEMA 4X small case.
 - 2) Response time of less than five nanoseconds.
 - 3) AC Power protection: IEEE/ANSI Std. C-62.41 rated C3 at 330 Volts clamping level.
 - 4) Signal line protection: 10,000 Amp 8 x 20 microsecond surge, clamped at 36 Volts clamping level.
 - 5) Test jacks for low level signal monitoring.
 - 6) Manufacturer/model: EDCO SLAC series or approved equal.
- C. Loop Powered Instruments. Lightning and surge protection shall be provided on the 4-20 mA DC signal line. The protectors shall meet the following criteria:
 - 1) Encapsulated in Stainless Steel Pipe nipples for in-line conduit mounting.
 - 2) Response time of less than one nanosecond.

- 3) Capable of withstanding up to 400 occurrences of 500 Amps at 10 x 1 millisecond.
- 4) Series resistance of 5 ohms per line.
- 5) Protection of both lines plus shield
- 6) Manufacturer/model: EDCO SS65 or approved equal

2.03 FIELD INSTRUMENTS

A. Submersible Pressure Transmitter. The submersible pressure transmitter shall comprise a sensor that uses a diaphragm to detect liquid pressure and manufacturer supplied cable.

- 1) System Performance:
 - a. Range: 0-50 PSI.
 - b. Overall system accuracy shall be ± 0.25 percent of span.
 - c. Repeatability: ± 0.05 percent of span.
- 2) Materials:
 - a. Body: Stainless Steel.
 - b. Diaphragm: Stainless Steel.
 - c. Cable: Polyurethane.
- 3) Ratings:
 - a. IP68 rated for total submergence.
 - b. Cable rated for up to 220 pounds of strain.
- 4) Electrical:
 - a. Power Requirement – Loop powered 10-30 VDC
 - b. Output: 2-wire 4-20 mA.
- 5) Options: Provide the following manufacturer supplied options:
 - a. Vent tube filter.
 - b. Desiccant drying cartridge.
 - c. Cable clamp.
 - d. Lightning protection.
- 6) Manufacturer, Model series:

- a. TE connectivity KPSI 320
- b. Wika Instruments Model LS-10.

2.04 TEST EQUIPMENT AND SPECIAL TOOLS

- A. Provide a handheld programmer suitable for calibrating the pressure transmitters.

2.05 SPARES AND EXPENDABLES

- A. Provide the following spare parts:

- 1) One spare analysis sensor of each type used.
- 2) Five (5) spare fuses of each type and rating supplied.
- 3) Two (2) spare surge protection devices of each type used.

- B. Provide the following expendables:

- 1) One year's (or shelf life worth if less than one year) supply of buffer and reagents used for analyzers.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install the PICS field instruments in strict accordance with the respective manufacturer's instructions and recommendations, in locations as shown on the Drawings, and as indicated on the installation details of the Drawings.
- B. Fully calibrate each instrument.
- C. Provide surge protection enclosures to the electrical sub-contractor for mounting and installation. The enclosures shall be fully wired internally. Coordinate grounding requirements with Division 16, Electrical.

3.02 TRAINING

- A. Two days of on-site (field) training shall be conducted at the OWNER's plant site and shall provide detailed hands-on instruction to OWNER's personnel covering all supplied field instruments.
- B. Training shall include:
 - 1) Calibration procedures.
 - 2) Preventive maintenance methods and timing.
 - 3) Fault-finding techniques.

END OF SECTION

SECTION 16050 – ELECTRICAL - GENERAL PROVISIONS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment, and incidentals required for a complete electrical system for the Ashley Water Treatment Plant Well No. 2 for the City of Wildwood, Florida, hereinafter specified and shown on the Drawings.
- B. The work, apparatus and materials which shall be furnished under these Specifications and accompanying Drawings shall include all items listed hereinafter and/or shown on the Drawings. Certain equipment will be furnished as specified in other sections of these Specifications which will require wiring thereto and/or complete installation as indicated. All materials necessary for the complete installation shall be furnished and installed by the CONTRACTOR to provide complete power, lighting, communication systems, instrumentation, wiring and control systems as indicated on the Drawings and/or as specified herein.
- C. The CONTRACTOR shall furnish and install the necessary cables, transformers, switchboards, protective devices, conductors, exterior electrical system, etc., to serve motor loads, lighting loads and miscellaneous electrical loads as indicated on the Drawings and/or as specified hereinafter.
- D. The work shall include complete testing of all equipment and wiring at the completion of the work and making any minor connection changes or adjustments necessary for the proper functioning of the system and equipment. All workmanship shall be of the highest quality; sub-standard work will be rejected.
- E. Mount and wire speed indicators, variable frequency drives and process instruments furnished under these or other Divisions of these Specifications.
- F. Mount and wire isolation transformers, operator's stations, and power conversion equipment for all variable speed drive systems furnished under other Divisions of these specifications.
- G. Make all field connections to process instrument panels and other control panels furnished under other Divisions of these Specifications.
- H. For process instrumentation furnish and install all conduit, wire and interconnections between primary elements, transmitters, local indicators, and receivers.
- I. Install and wire all thermostats, aquastats, and other devices furnished under other Divisions of this Specification directly controlling heating equipment or fan motors.
- J. Wire ventilation equipment as required and furnished under other Divisions of this Specification.
- K. Each bidder or his authorized representatives shall, before preparing his proposal, visit all areas in which work under this division is to be performed and carefully inspect the present installation. The submission of the proposal by this bidder shall be considered evidence that he or his representative has visited the site and noted the locations and conditions

under which the work will be performed and that he takes full responsibility for a complete knowledge of all factors governing his work.

- L. All power interruptions to existing equipment shall be at the Owner's convenience. Each interruption shall have prior approval.
- M. It is the intent of these Specifications that the electrical system shall be suitable in every way for the service required. All material and all work which may be reasonably implied as being incidental to the work of this Section shall be furnished at no extra cost.

1.02 SERVICE AND METERING

- A. Permanent electrical power is existing provided by SECO at the voltages indicated on the drawings.

1.03 CODES, INSPECTION AND FEES

- A. All material and installation shall be in accordance with the latest edition of the National Electrical Code and all applicable national, local, and state codes.
- B. Pay all fees required for permits and inspections including any charges associated with the service modifications.

1.04 TESTS

- A. Test all systems and repair or replace all defective work. Make all necessary adjustments to the systems and instruct the Owner's personnel in the proper operation of the systems.
- B. The following minimum tests and checks shall be made prior to the energizing of electrical equipment. Test shall be by an independent NETA certified testing firm, and a certified test report shall be submitted stating that the equipment meets and operates in accordance with the Manufacturer's and job specifications, and that equipment and installation conforms to all applicable Standards and Specifications:
 - 1) Testing and setting of protective relays for calibration and proper operation.
 - 2) Mechanical inspection of all circuit breakers 200 amps and larger to assure proper operation.
 - 3) Motors: Megger to ground each motor winding. Record date, motor temperature, terminal, reading and operator and have Owner representative sign off on each reading.
 - 4) Conductors: Megger to ground prior to termination all 600-volt conductors not used for service conductors. Record the date, conductor, reading and operator and have Owner representative sign off on each reading.
 - 5) Service Conductors: Megger to ground prior to termination in the presence of the Engineer or his representative all 600-volt service conductors. Record date, conductor, reading, operator, and have the Owner representative sign off on each reading.
 - 6) Connections & Terminations:

- a. 480V Panel: Torque to Manufacturer's values in the presence of the Engineer or his representative. Record the date, conductor, torque, operator and have the Engineer sign off on each reading.
- 7) Data Base: After equipment suppliers test, calibrations, and inspection, megger all circuits leaving all switchboards. Record the date, conductor, circuit condition (i.e. load connected or unconnected), reading and operator and have Owner representative sign off on each reading.
- 8) Hot Spot Testing: Perform infrared hot spot inspection of the 480 volt motor control centers and associated equipment as soon as determined by the engineer that representative loads are present. Record the date, gear conditions found, operator and have the owner's representative who must be present for the inspection sign off in each instance.
- 9) Repeat the above infrared hot spot inspection one more time if required by the Engineer.
- 10) Miscellaneous:
 - a. Meggering must be done at 1000 VDC for one minute. The ground plane used must be the one established at the main source of energy for conductors, switchboards and control centers. The motor frame may be used for the ground plane for motors.
 - b. During construction, it will become necessary to temporarily energize some systems for testing. Confirm that any motor has been meggered prior to connection and testing. Do not leave any motor or system unattended and energized without written authorization.
 - c. An unsuccessful test will be one in which any one of the three megger readings differs from another by more than 25%. Engineer shall determine if cables and/or equipment bussing shall be replaced.

1.05 SLEEVES AND FORMS FOR OPENINGS

- A. Provide and place all sleeves for conduits penetrating floors, walls, partitions, etc. Locate all necessary slots for electrical work and form before concrete is poured.

1.06 CUTTING AND PATCHING

- A. All cutting and patching shall be done in a thoroughly workmanlike manner.

1.07 INTERPRETATION OF DRAWINGS

- A. The Drawings are not intended to show exact locations of conduit runs.
- B. All three-phase circuits shall be run in separate conduits unless otherwise shown on the Drawings.
- C. Unless otherwise approved by the Engineer conduit shown exposed shall be installed exposed; conduit shown concealed shall be installed concealed.

- D. Where circuits are shown as "home-runs" all necessary fittings and boxes shall be provided for a complete raceway installation.
- E. The CONTRACTOR shall harmonize the work of the different trades so that interferences between conduits, piping, equipment, architectural and structural work will be avoided. All necessary offsets shall be furnished to take up a minimum space and all such offsets, fittings, etc., required to accomplish this shall be furnished and installed by the CONTRACTOR without additional expense to the Owner. In case interference develops, the Owner's authorized representative is to decide which equipment, piping, etc., must be relocated, regardless which was installed first.
- F. Verify with the Engineer the exact locations and mounting heights of lighting fixtures, switches, and receptacles prior to installation.
- G. The locations of equipment, fixtures, outlets, and similar devices shown on the Drawings are approximate only. Exact locations shall be as approved by the Engineer during construction. Obtain in the field all information relevant to the placing of electrical work and in case of any interference with other work, proceed as directed by the Engineer and furnish all labor and materials necessary to complete the work in an approved manner.
- H. Surface mounted panel boxes, junction boxes, conduit, etc., shall be supported by spacers to provide a clearance between wall and equipment.
- I. Circuit layouts shown are not intended to show the number of fittings, or other installation details. Furnish all labor and materials necessary to install and place in satisfactory operation all power, lighting, and other electrical systems shown. Additional circuits shall be installed wherever needed to conform to the specific requirements of the equipment.
- J. The ratings of motors and other electrically operated devices together with the size shown for their branch circuit conductors and conduits are approximate only and are indicative of the probable power requirements insofar as they can be determined in advance of the purchase of equipment.
- K. All connections to equipment shall be made as shown, specified, and directed and in accordance with the Manufacturer's approved shop drawings, regardless of the number of conductors shown on the Electrical Drawings.

1.08 SIZE OF EQUIPMENT

- A. Investigate each space in the building where equipment must pass to reach its final location. If necessary, the Manufacturer shall be required to ship his material in sections, sized to permit passing through such restricted areas in the building.
- B. The equipment shall be always kept upright. When equipment has to be tilted for ease of passage through restricted areas during transportation, the Manufacturer shall be required to brace the equipment suitably, to ensure that the tilting does not impair the functional integrity of the equipment.

1.09 RECORD DRAWINGS

- A. As the work progresses, legibly record all field changes on a set of project Contract Drawings. When the project is completed, furnish a complete set of reproducible "As-built"

drawings and electronic files (Autocad) for the Project Record Documents. These documents shall be 22" x 34" in size.

1.10 COMPONENT INTERCONNECTIONS

- A. Component equipment furnished under this Specification will not be furnished as integrated systems. CONTRACTOR shall field install and wire completely all components.
- B. CONTRACTOR shall analyze all systems components and their shop drawings, identify all terminals, and prepare drawings and wiring tables necessary for component interconnection. CONTRACTOR shall provide crimp on wire numbers on both ends of all control wiring installed between all panels furnished under this contract. These numbers shall directly relate to the interconnect wiring drawing furnished by the CONTRACTOR and be reflected in the As-built drawings submitted prior to final acceptance of the project.

1.11 SHOP DRAWINGS

- A. As specified under other sections shop drawings shall be submitted for approval of all materials, equipment, apparatus, and other items as required by the Engineer.
- B. Shop drawings shall be submitted for the following equipment:
 - 1) Disconnect Switches
 - 2) Motor Starters
 - 3) Emergency Battery Units
 - 4) Wire and Cable
 - 5) Solid State Starter
 - 6) Process Control Panel (PCP-1 Modifications)
 - 7) Conduit Layout Drawings
 - 8) Service Equipment Racks with Structural Engineering Certification
 - 9) Field Instruments
- C. The Manufacturer name and product designation and catalog data sheet shall be submitted for the following material:
 - 1) Conduit
 - 2) Receptacles
 - 3) Boxes and fittings
 - 4) Switches
 - 5) Lamps
 - 6) Control Relays

- D. Prior to submittal by the CONTRACTOR, all shop drawings shall be checked for accuracy and contract requirements. Shop drawings shall bear the date checked and shall be accompanied by a statement that the shop drawings have been examined for conformity to Specifications and Drawings. This statement shall also list all discrepancies with the Specifications and Drawings. Shop drawings not so checked and noted shall be returned.
- E. The Engineer's check shall be only for conformance with the design concept of the project and compliance with the Specifications and Drawings. The responsibility of, or the necessity of, furnishing materials and workmanship required by the Specifications and Drawings which may not be indicated on the shop drawings is included under the work of this Section.
- F. The responsibility for all dimensions to be confirmed and correlated at the job site and for coordination of this work with the work of all other trades is also included under the work of this Section.
- G. No material shall be ordered, or shop work started until the Engineer's approval of shop drawings has been given.

1.12 MANUFACTURER SERVICES

- A. Provide Manufacturer services for testing and start-up of the following equipment:
 - 1) Solid State Starters
- B. The Manufacturer of the above listed equipment shall provide experienced Field Service Engineer to accomplish the following tasks:
 - 1) The equipment shall be visually inspected upon completion of installation and prior to energization to assure that wiring is correct, interconnection complete and the installation follows the manufacturer's criteria. Documentation shall be reviewed to assure that all Drawings, operation and maintenance manuals, parts list and other data required to check out and sustain equipment operation is available on site. Documentation shall be red-lined to reflect any changes or modifications made during the installation so that the "As-built" equipment configuration will be correctly defined. Spare parts shall be inventoried to assure correct type and quantity. The Manufacturer shall provide written approval that equipment supplied is approved for energization.
 - 2) The Field Service Engineers shall provide engineering support during the energization and check out of each major equipment assembly. They shall perform any calibration or adjustment required for the equipment to meet the Manufacturer's performance specifications.
 - 3) Upon satisfactory completion of equipment test, they shall provide engineering support of system tests to be performed in accordance with Manufacturer's test specifications.
 - 4) Two (2) 4-hour training sessions on operation, and two (2) 4-hour training sessions (one for each system) on maintenance and trouble-shooting procedures shall be provided for the Owner's maintenance personnel. All training shall be conducted

at a facility provided by the Owner. The maintenance and trouble-shooting sessions shall be conducted with record "As-built" electrical drawings sufficient for a class of eight personnel.

- 5) A final report shall be written and submitted to the CONTRACTOR within fourteen days from completion of final system testing. The report shall document the inspection and test activity, define any open problems, and recommend remedial action. The CONTRACTOR shall forward a copy of this report to the ENGINEER for approval.

1.13 DEMOLITION

- A. Remove all electrical work associated with equipment shown to be removed (TBR) except those portions indicated to remain or be reused. Remove all unused exposed conduit and wiring back to point of concealment. Remove unused wiring in concealed conduits back to source (or nearest point of usage). Electrical work to be removed corresponds to the associated mechanical equipment to be removed.
- B. Where electrical systems pass through the demolition areas to serve other portions of the premises, they shall remain or shall be suitably relocated, and the system restored to normal operation. Coordinate outages in systems with the Owner. Where duration of proposed outage cannot be allowed by the Owner, provide temporary connections as required to maintain service.
- C. All removals and relocations of existing installations cannot be completely detailed on the Drawings. Survey the existing sites before submitting bid proposal.
- D. Continuous service is required on all circuits and outlets affected by these changes, except where the Owner will permit outage for a specific time. Obtain Owner's written consent before removing any circuit from continuous service.
- E. Where required to disconnect and/or remove any part of an existing circuit, reconnect that circuit to reestablish service in the remaining portion.
- F. Remove exposed conduits, wireways, outlet boxes, pull boxes and hangers made obsolete by the alternations, unless specifically designated to remain. Exposed conduits shall be removed back to point of concealment, where they shall be cut and threaded for a cap. A threaded cap shall then be installed. Conduits may be removed back to first coupling if within 3-inches of point of concealment. Cut back in traffic areas to the floor level and patch.
- G. Repair all walls to "Like new" condition and paint to match existing wall color.

1.14 DISPOSITION OF REMOVED MATERIALS AND EQUIPMENT

- A. In general, it is intended that all materials and equipment indicated to be removed and disposed of by the CONTRACTOR shall, upon removal, become the CONTRACTOR's property and shall be disposed of off the site by the CONTRACTOR, unless otherwise directed by the Owner.
- B. Reuse of wire will not be permitted. An exception is the reuse or relocation when wire is part of an existing lighting branch circuit and reuse, or relocation is specifically designated and can be accomplished without removing and re-pulling the wire.

- C. All reusable and salvageable disconnect switches, starters, control devices, control panels and instruments, receptacles, light fixtures, etc. shall be sorted and returned to the Owner.
- D. All electrical equipment to be salvaged shall be removed and shall be moved by the CONTRACTOR to a location on the site for storage as directed by the Owner.

1.15 CONDUIT LAYOUT DRAWINGS

- A. In addition to the manufacturer's equipment shop drawings, the Contractor shall submit for the approval, electrical installation working drawings for the overall site work and all electrical rooms, including but not limited to the water treatment plant building containing the following:
 - 1) Concealed and buried conduit layouts shown on floor plans drawn at not less than 1/4-inch = 1-foot-0-inch scale. The layouts shall include locations of process equipment, switchboards, transformers, panelboards, control panels and equipment, motors, switches, motor starters, large junction or pull boxes, instruments, and any other electrical devices connected to concealed or buried conduits.
 - 2) Plans shall be drawn on high quality bond size x 22-inch x 34-inch, and shall be presented in a neat, professional manner.
 - 3) Concrete floors and/or walls containing concealed conduits shall not be poured until conduit layouts are approved. Conduit layout drawings must be approved by the Engineer prior to installation of any electrical equipment.
 - 4) Site plan conduit layout drawings shall be at 1-inch = 10-foot-0-inch.
 - 5) Note: ACAD drawing files are available from the Engineer.

1.16 MATERIALS

- A. The materials used in all systems shall be new, unused and as hereinafter specified. All materials where not specified shall be of the very best of their respective kinds. Samples of materials or Manufacturer's specifications shall be submitted for approval as required by the Engineer.
- B. Materials and equipment used shall be Underwriters Laboratories, Inc. listed.
- C. Electrical equipment shall always during construction be adequately protected against mechanical injury or damage by water. Electrical equipment shall not be stored out-of-doors. Electrical equipment shall be stored in dry permanent shelters. If any apparatus has been damaged, such damage shall be repaired by the CONTRACTOR at his own cost and expense. If any apparatus has been subject to possible injury by water, it shall be thoroughly dried out and put through such special tests as directed by the Engineer, at the expense of the CONTRACTOR, or shall be replaced by the CONTRACTOR at his own expense.

1.17 COORDINATION, SHORT CIRCUIT AND FLASH HAZARD STUDY

A. General:

- 1) The Contractor shall provide a Power System Study and Arc Flash Study for the electrical power distribution and motor control equipment. The studies shall be a totally independent effort to verify adequacy of all the existing equipment as well as new additions being implemented under these Specifications. The studies shall be prepared by a professional Engineer, registered in the State of Florida, with demonstrated experience in the performance of industrial power system and fault arc hazard analysis. All work shall be submitted both hard copy and thumb drive (SKM files). The studies shall be prepared using SKM Power Tools software, latest version. The following firms are approved for the short circuit and arc flash study:
 - a. Judson Walker. P.E. (Phone: 904-219-0685)
 - b. Industry Electric Design (Main, 678-6127-7507) (Cell, 770-531-0072 Work), Mr. Don Trawick, P.E.
- 2) The Contractor shall provide data necessary to perform the study. This includes feeder cable sizes, approximate feeder length motor data, generator data, existing protective relay settings and any other information relevant to the study.
- 3) A summary of the short circuit analysis shall be provided to the Contractor at the time shop drawings for all the new equipment is submitted for approval.
- 4) The Contractor shall provide complete sets of motor control center and emergency generator shop drawings for use in the studies.

B. Scope:

- 1) The short circuit study shall be in accordance with ANSI Standard C37.010 and C37.13, shall be performed to check the adequacy, and to verify the correct application of circuit protective devices and other system components specified. The study shall address the case when the system is being powered from the normal source as well as from the on-site generating facilities. Minimum as well as maximum possible fault conditions shall be adequately covered in the study.
- 2) Fault contribution of all motors shall be considered. The Contractor shall be responsible for obtaining all required data of equipment. All back-up calculations shall become part of the final report. The calculations shall be in sufficient detail to allow easy review.
- 3) The arc flash analysis study shall include the calculations of flash protection boundary limits and the incident energy exposure for the maximum arc producing flash expected from the electrical equipment. The study will determine incident energy exposure level and flash arc protection boundaries for the electrical equipment, based on IEEE-1584 and NFPA-70E. The study shall be based on the protective device settings and interrupting device clearing time.

C. Contents:

- 1) The study shall include representation of the power company's system, the base quantities selected, impedance source-data, calculation methods and tabulations, one-line and impedance diagrams, conclusions, and recommendations. Short-circuit momentary duties shall be calculated on the basis of an assumed bolted three-phase short circuit at the main breaker, ATS, 480-volt motor control center, distribution panelboard, pertinent branch circuit panelboard, and other significant locations throughout the systems. The short circuit tabulations shall include significant X to R ratios, asymmetry factors, KVA, and symmetrical fault current.
- 2) A protective device time current coordination study shall be included with coordination plots of key and/or limiting devices, tabulated data, rating, and/or settings selected. The study shall present an Engineering balance between the competing objectives of protection and continuity of service for the system specified, considering the basic factors of sensitivity, selectivity, and speed.
- 3) Separate plots shall be provided for each mode, "normal," and "standby," operation. Maximum fault values shall be shown in each case. Both power sources shown in one plot will not be accepted.
- 4) Generator short circuit decrement curves and thermal limit curves shall be included.
- 5) Required settings for breakers and relays shall be maximized to provide the most effective protection possible whether the system is fed from the normal or emergency source.
- 6) Tabulations indicating recommended set points for all protective devices shall be provided. This shall include the normal as well as the emergency source.
- 7) Arc Flash study shall include representation of the calculation methods and tabulations, and a one-line drawing of all identifying equipment included in this study. The complete study shall be turned over to the Owner as per 01300. As part of the study, the Contractor shall affix permanent adhesive non-fading labeling indicating the equipment ID number and required information as required by NFPA 70E. Two Arc Flash labels shall be provided for each equipment: The first label shall provide arc flash information based on generator power (generator running). The second label shall provide arc flash information based on utility power (normal power). Samples of arc flash warning labels are presented below:

FIGURE 1

WARNING

Arc Flash and Shock Risk
Appropriate PPE Required

32 in	Arc Flash Boundary
3.06 cal/cm ²	Incident Energy at 18 in
PPE	Arc-rated shirt & pants + arc-rated coverall + arc-rated arc flash suit
480 VAC	Shock Risk when cover is removed
00	Glove Class
42 in	Limited Approach
12 in	Restricted Approach

Bus: BUS ATS-1 Prot: FDR DISC MTR AB 1

D. Motor Current-Time Characteristic Curves:

- 1) A complete independent set of current-time characteristic curves for all 480-volt motor drives indicating coordination between the protective relays and the thermal characteristics of the motor shall be provided.
- 2) The Contractor shall obtain from the motor supplier, the necessary information to perform the study. Certified curves for, "Safe time vs. current at 100 percent voltage," and "Accelerating time vs. current at 100 percent voltage," shall become part of the final report.

E. Motor Starting Study:

- 1) A motor starting study for all large electric drives (100 horsepower and above) to determine voltage dip or power inrush limitations at selected locations due to starting of motors shall be provided. This applies to both the normal and the emergency mode.

F. Generator Protective Devices:

- 1) The study shall address all the protective devices provided for generator protection.
- 2) Protective relays requiring settings shall include, but not necessarily limited to:
 - a. Differential
 - b. Overcurrent with voltage restraint
 - c. Ground
 - d. Undervoltage
 - e. Reverse power

- f. Unbalanced loading and open phase
- g. Loss of excitation

G. General Information for Time-Current Curves Presentation:

- 1) The coordination plots shall include complete titles, representative one-line diagrams, legends, associated power company's relay or system characteristics, significant motor starting characteristics, complete parameters for power, and substation transformers, and complete operating bands for low-voltage circuit breaker trip devices.
- 2) The coordination plots shall define the types of protective devices selected, together with the proposed coil taps, time-dial settings and pickup settings required.
- 3) The short-time region shall indicate the medium voltage relay instantaneous elements, the magnetizing in-rush, and ANSI withstand transformer parameters, the low-voltage circuit breaker instantaneous trip devices, fuse manufacturing tolerance bands, and significant symmetrical and asymmetrical fault currents.
- 4) Each primary protective device required for a delta-to-wye connected transformer shall be selected so that the characteristic or operating band is within the transformer parameters, which, where feasible, shall include a parameter equivalent to 58 percent of the ANSI withstand point to afford protection for secondary line-to-ground faults.
- 5) Low-voltage power circuit breakers shall be separated from each other and the associated primary protective device, where feasible, by a 16 percent current margin for coordination and protection in the event of secondary line-to-line faults.
- 6) Protective relays shall be separated, where feasible, by a 0.3 second time margin when the maximum three-phase fault flows, to assure proper selectivity.

1.18 OPERATION AND MAINTENANCE DATA

- A. Submit complete operations and maintenance data for all equipment furnished under this Division in accordance with Section 01730. The manuals shall be prepared specifically for this installation and shall include all required cuts, Drawings, equipment lists, descriptions, complete part lists, etc. that are required to instruct operating and maintenance personnel unfamiliar with such equipment.

1.19 WARRANTY

- A. Provide a warranty for all the electrical equipment in accordance with the requirements of other sections, but in no case less than two (2) years from date of owner acceptance.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 16108 - MISCELLANEOUS EQUIPMENT

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Furnish and install all miscellaneous equipment as hereinafter specified and as shown on the Drawings.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Disconnect Switches:
 - 1) Fusible and non-fusible disconnect switches shall be heavy-duty, NEMA type H, quick-make, quick-break, visible blades, 600 volts and 240 volts as shown on the drawings with full cover interlock. All current carrying parts shall be copper.
 - 2) Enclosure type shall be NEMA 4X 316, stainless steel with copper lugs except as otherwise shown on the Drawings.
 - 3) Switches shall be horsepower rated as manufactured by Square D, Eaton or Siemens.
 - 4) Control wiring shall not pass through any disconnect enclosure. A junction box shall be provided, constructed of the same material as the disconnect, and utilized to separate power and control wiring prior to the disconnect enclosure.
 - 5) Each disconnect shall be provided with a plastic nameplate, affixed to the enclosure without screws, identifying the equipment served.
- B. Reduced Voltage Solid State Starter (SSS):
 - 1) Reduced voltage solid state starters shall be combination solid state motor controller with circuit breaker (Danfoss, no equal). Starters shall be "Heavy Duty" type, rated 55 degrees C (Severe Duty) manufactured by Danfoss, ABB or Siemens.
 - 2) Starters shall be provided with isolation bypass contactors with overloads. Selector switch shall be on the enclosure inner door. AIC rating shall be 35,000 amps minimum.
 - 3) Motor starters shall have a 120-volt operating coil, overload relay in each phase and control power transformer.
 - 4) Motor starters shall have 1-normally open and 1-normally closed auxiliary contacts. Additional auxiliary contacts shall be furnished where shown on the Drawings or as required by the control scheme.
 - 5) Overload relays shall be adjustable and manually reset by push button in compartment door. Replaceable individual overload relay heaters of the proper size shall be installed in each phase.

- 6) Control power transformers shall be sized for additional load where required. Transformer secondaries shall be equipped with time-delay fuses.
- 7) Motor circuit protectors shall be molded case with adjustable magnetic trip and ground fault protection equipment. They shall be specifically designed for use with solid-state reduced voltage starters. Motor circuit protectors shall have auxiliary disconnect contacts when used with starters having external control circuits. Motor circuit protectors shall be Square D or Cutler Hammer. Ground fault protection equipment shall be provided.
- 8) The following options shall be required:
 - a. Soft start
 - b. Soft stop
 - c. Protective module - line side of each starter
- 9) Door mounted devices shall be as shown on the starter elementary diagrams.
- 10) A five (5) year on-site warranty shall be provided such that the owner is not responsible for any warranty costs including travel, labor, parts, or other costs for a full 5 years from the date of manufacture of the Drive. The warranty shall cover all Drive failures including line anomalies – including lightning strikes, load anomalies, accidental exposure to moisture or corrosives and accidental collision of other physical damage; product misapplications, vandalism and chronic problems due to the misapplication are not covered. The cost of the warranty shall be included in the bid.

C. Control Stations:

- 1) Control stations shall be NEMA 4X stainless steel heavy-duty type, with full size operators when located outdoors, in "NEMA 4" locations or in "Corrosive" areas.
- 2) Control stations shall be Class 9001, manufactured by the Square D Company or approved equal.
- 3) Pilot lights shall be complete with glass jewels and 150-volt lamps.

D. Unless otherwise noted, all outdoor enclosures shall be NEMA 3R stainless steel. NEMA 4X push buttons and pilot lights shall be provided in all weatherproof control panels.

END OF SECTION

SECTION 16110 - RACEWAYS AND FITTINGS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Furnish and install complete raceway systems as shown on the Drawings and as specified herein.

1.02 APPLICATIONS

- A. Except where otherwise shown on the Drawings, or hereinafter specified. The following describes the conduit requirements of the project:
 - 1) All exposed raceways shall be in aluminum conduit unless otherwise noted in 2 through 4 below.
 - 2) Underground power conductors shall be installed in schedule 80 PVC conduits.
 - 3) Instrumentation circuits (4-20 mA signal wire) shall be installed in GRS conduit.
 - 4) Conduit installed in "Corrosive" areas or chemical rooms shall be PVC schedule 80.
- B. All conduit of a given type shall be the product of one manufacturer.
- C. Unless otherwise hereinafter specified or shown on the Drawings, all boxes installed outdoors shall be NEMA 3R stainless steel. All boxes installed indoors shall be PVC construction.
- D. Exposed switch, outlet and control station boxes and fittings shall be cast iron or "Feraloy" by Crouse-Hinds in NEMA 1 areas, and stainless steel where outdoors, where located in NEMA 4 areas or in "Corrosive" areas.
- E. Concealed switch, outlet and control station boxes shall be pressed steel. Terminal boxes, junction boxes, pull boxes, etc., installed outdoors shall be NEMA 4X stainless steel. All boxes installed indoors shall be PVC construction. NEMA rating for the PVC boxes shall be as shown on the drawings.
- F. All conduits entering or leaving the Chlorine Room shall have Crouse Hinds EYS conduit seals installed and filled with Chico cement.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Rigid Metal Conduit
 - 1) Rigid metal conduit shall be for use under the provisions of NEC Article 346.
 - 2) Rigid steel conduit interior and exterior shall be hot-dipped galvanized after threading and be as manufactured by the Allied Tube and Conduit Corp., Wheatland Tube Co., Triangle PWC Inc., or approved equal.
 - 3) Rigid aluminum conduit shall be 6063 alloy and shall be as manufactured by New Jersey Aluminum Corp., AFC Co., VAW of America, Inc., or approved equal.
 - 4) PVC coated rigid steel conduit shall have a 1/50-in thick, polyvinyl chloride coating permanently bonded to hot-dipped galvanized steel conduit and an internal

phenolic coating and shall be plasti-bond 2" as manufactured by Robroy Industries, Triangle PWC Inc., Perma-Cote Industries, or approved equal.

B. Rigid Nonmetallic Conduit

- 1) Rigid nonmetallic conduit shall be for use under the provisions of NEC Article 347.
- 2) PVC conduit shall be rigid polyvinyl chloride Schedule 80 as manufactured by Carlon, An Indian Head Co., Kraloy Products Co., Inc., Highland Plastics Inc., or approved equal.

C. Liquidtight Flexible Metal Conduit, Couplings and Fittings

- 1) Liquidtight flexible metal conduit shall be for use under the provisions of NEC Article 351A.
- 2) Liquidtight flexible metal conduit shall be Sealtite, Type UA, manufactured by the Anaconda Metal Hose Div., Anaconda American Brass Co., American Flexible Conduit Co., Inc., Universal Metal Hose Co., or approved equal.
- 3) Fittings used with liquid tight flexible metal conduit shall be of the screw-in type as manufactured by the Thomas and Betts Co., Crouse-Hinds Co., or approved equal.

D. Flexible Couplings

- 1) Flexible couplings shall be as manufactured by the Crouse-Hinds Co., Appleton Electric Co., Killark Electric Manufacturing co., or approved equal.

E. Boxes and Fittings:

- 1) Steel elbows and couplings shall be hot-dipped galvanized. An extra 40 mil PVC protective coating shall be provided when used with PVC coated steel conduit. Joints shall be tapped.
- 2) Conduit hubs shall be as manufactured by Meyers Electric Products, Inc., Raco Div., Appleton Electric Co., or approved equal. Conduit hubs shall be provided for all outdoor conduit terminations.
- 3) Conduit wall seals shall be type WSK as manufactured by the O.Z. Electrical Mfg. Co. or approved equal.
- 4) Conduit wall seals for cored holes shall be type CSML as manufactured by the O.Z./Gedney Co. or approved equal.
- 5) Conduit wall and floor seals for sleeved openings shall be type CSMI as manufactured by the O.Z./Gedney Co. or approved equal.
- 6) Conduit sealing bushings shall be O.Z./Gedney Type CSB or approved equal.

F. Conduit Mounting Equipment:

- 1) In dry indoor areas, hangers, rods, backplates, beam clamps, channel, etc. shall be galvanized rigid steel or FRP construction.
- 2) FRP channel, and stainless-steel hardware shall be used in areas designated "WET," "CORROSIVE," or NEMA 4 on the Drawings. Fiberglass channel shall be resistant to the chemicals present in the area in which it is used.

- 3) Channel installed outdoors shall be stainless steel.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. No conduit smaller than 3/4-inch electrical trade size shall be used, nor shall any have more than four 90-degree bends in any one run. Pull boxes shall be provided as required or directed. Minimum size in floor slabs shall be 3/4-inch.
- B. No wire shall be pulled until the conduit system is complete in all details; in the case of concealed work, until all rough plastering or masonry has been completed; in the case of exposed work, until the conduit system has been completed in every detail.
- C. The ends of all conduits shall be tightly plugged to exclude dust and moisture while the buildings are under construction.
- D. Conduit supports shall be spaced at intervals as required to obtain rigid construction, but in no case more than as required by the NEC.
- E. Single conduits shall be supported by means of one-hole pipe clamps in combination with one-screw back plates, to raise conduits from the surface. Multiple runs of conduits shall be supported on trapeze type hangers with steel horizontal members and threaded hanger rods. The rods shall be not less than 3/8-inch diameter. Material type shall be as specified in Section 2.
- F. Conduit hangers shall be attached to structural steel by means of beam or channel clamps. Where attached to concrete surfaces, concrete inserts of the spot type shall be provided.
- G. All conduits on exposed work shall be run at right angles to and parallel with the surrounding walls and shall conform to the form of the ceiling. No diagonal runs will be allowed. Bends in parallel conduit runs shall be concentric. All conduits shall be run perfectly straight and true. Conduits not installed in this fashion shall be replaced.
- H. No unbroken run shall exceed 300 feet in length. This length shall be reduced by 75 feet for each 90-degree elbow.
- I. Conduit terminating in pressed steel boxes shall have double locknuts and insulated bushings.
- J. Conduit terminating in gasketed enclosures shall be terminated with conduit hubs.
- K. Conduit wall seals shall be used for all conduits penetrating walls below grade or other locations shown on the Drawings.
- L. Liquidtight flexible PVC conduit shall be used for all motor and transformer terminations and other equipment where vibration is present.
- M. Flexible couplings shall be used in hazardous locations for all motor and transformer terminations and other equipment where vibration is present.
- N. Conduit stub outs for future construction shall be provided with threaded PVC end caps at each end.
- O. Galvanized steel conduit entering manholes and below grade pull boxes shall be terminated with grounding type bushings and connected to a 5/8" x 10" rod with a #6 bare copper wire.

- P. Underground 120-volt circuits (GRS or Schedule 80 PVC) shall be installed directly to the respective motor control centers, lighting panels, etc. Stainless steel pull boxes shall be wall mounted on structures to eliminate excessive bends. With prior approval, below grade pull boxes, equal to Brooks #2424 (minimum), with hot dip galvanized covers and frames, may be used. Splices shall not be made in above or below grade pull boxes without prior approval.
- Q. All field cut threads on galvanized steel conduit shall be cleaned and painted with zinc-rich paint before installing.
- R. A 4-inch concrete conduit housekeeping pad shall be required for all exposed conduit stub-ups. This applies to ALL exposed conduits installed indoors or outdoors.

END OF SECTION

SECTION 16120 - WIRES AND CABLES

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Furnish, install, and test all wire, cable, and appurtenances as shown on the Drawings and as hereinafter specified.

1.02 SUBMITTALS

- A. Samples of proposed wire and cable shall be submitted for approval. Each sample shall have the size, type of insulation and voltage stenciled on the jacket.
- B. Approved samples will be sent to the project location for comparison by the Resident Engineer with the wire installed.
- C. Installed, unapproved wire shall be removed and replaced at no additional cost to the Owner.

1.03 APPLICATIONS

- A. Wire for lighting and receptacle circuits above grade shall be type THWN-2.
- B. Wire for all power motor circuits and below grade lighting and receptacle circuits shall be type XHHW-2, stranded.
- C. Single conductor wire for control, indication and metering shall be type MTW No. 14 AWG, 19 strand or type XHHH No. 14 AWG stranded.
- D. Multi-conductor control cable shall be No. 14 AWG, 19 strand.
- E. Wire for process instrumentation or shielded control cable shall be No. 16 AWG, shielded and stranded. All shielded cables shall be provided with a #16 shielded ground.

1.04 MINIMUM SIZES

- A. Except for control and signal leads, no conductor smaller than No. 12 AWG shall be used.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. All wires and cables shall be of annealed, 98 percent conductivity, soft drawn stranded copper conductors.

2.02 600 VOLT WIRE AND CABLE

- A. Type XHHW-2 shall be cross-linked polyethylene (XLP); as manufactured by General Cable, Southwire Co., Collyer Insulated Wire Co., Rome Cable or approved equal.
- B. Type THWN-2 shall be as manufactured by General Cable, Southwire Co., Collyer Insulated Wire Co., Rome Cable or approved equal.

2.03 INSTRUMENTATION AND CONTROL CABLE

- A. Process instrumentation wire shall be twisted pair, 600V, cross-linked polyethylene insulated, aluminum tape shielded, polyvinyl chloride jacketed, type "XLP" as manufactured by General Cable, American Insulated Wire Co., Eaton Corp. "Polyset," or

approved equal. Multi-conductor cables shall be supplied with individually shielded twisted pairs.

- B. Multi-conductor control cable shall be stranded, 600V, cross-linked polyethylene insulated with PVC jacket, type "XLP" as manufactured by General Cable, American Insulated Wire Co., Eaton Corp. "Polyset," or approved equal.

2.04 TERMINATIONS AND SPLICES

- A. Power Conductors: Terminations shall be die type or set screw type pressure connectors as specified. Splices (where allowed) shall be die type compression connector and waterproof with heat shrink boot or epoxy filling.
- B. Control Conductors: Termination on saddle-type terminals shall be wired directly with a maximum of two conductors per termination. Termination on screw type terminals shall be made with a maximum of two spade connectors. Splices (where allowed) shall be made with insulated compression type connectors. Heat shrink boots shall be utilized for all outdoor splices.
- C. Instrumentation Signal Conductors (including graphic panel, alarm, low- and high-level signals): Terminations permitted shall be typical of control conductors. Splices are allowed at instrumentation terminal boxes only.
- D. Except where otherwise approved by the Engineer no splices will be allowed in manholes, handholes or other below grade located boxes.
- E. Splices shall not be made in push button control stations, control devices (i.e., pressure switches, flow switches, etc.), conduit bodies, etc.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All conductors shall be carefully handled to avoid kinks or damage to insulation.
- B. Lubrications shall be used to facilitate wire pulling. Lubricants shall be U.L. listed for use with the insulation specified.
- C. Shielded instrumentation wire shall be installed from terminal to terminal with no splicing at any intermediate point.
- D. Shielded instrumentation wire shall be installed in rigid steel conduit and pull boxes that contain only shielded instrumentation wire. Instrumentation cables shall be separated from control cables in manholes.
- E. Shielding on instrumentation wire shall be grounded at one end only, as directed by supplier of the instrumentation equipment.
- F. Wire and cable connections to terminals and taps shall be made with compression connectors. Connections of insulated conductors shall be insulated and covered. All connections shall be made using materials and installation methods in accordance with instructions and recommendations of the manufacturer of the particular item of wire and cable. The conductivity of all completed connections shall be not less than that of the uncut conductor. The insulation resistance of all completed connections of insulated conductors shall be not less than that of the uncut conductor.
- G. All wire and cable shall be continuous and without splices between points of connection to equipment terminals, except a splice will be permitted by the Engineer if the length required

between the points of connection exceeds the greatest standard shipping length available from the manufacturer specified or approved by the Engineer as the manufacturer of the particular item of wire and cable.

- H. Steel fish tapes and/or steel pulling cables shall not be used in PVC conduit runs.
- I. All control and instrumentation circuits and wiring shall be clearly and permanently numbered and labeled at each end to identify the location of the opposite end and the function of the circuit. Individual wires in a multi-wire circuit shall be identified with wire numbers. Labeling shall be in place prior to turnover of any equipment, system, or sub-system to Owner.

3.02 TESTS

- A. All 600-volt wire insulation shall be tested with a meg-ohmmeter after installation. Tests shall be made at not less than 1,000 VDC. See 16050 for additional testing requirements.
- B. All service conductors shall be tested as in paragraph A above. These tests shall be witnessed by the Engineer. A written report shall be submitted to the engineer for review.

END OF SECTION

SECTION 16150 - MOTORS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Furnish and install the motors as hereinafter specified and as called for in other sections of these Specifications.

1.02 QUALIFICATIONS

- A. Motor shall be sufficient size for the duty to be performed and shall not exceed their full-rated load when the driven equipment is operating at specified capacity. Unless otherwise noted, motors driving pumps shall not be overloaded at any head or discharge condition of the pump.

1.03 SUBMITTALS

- A. The motor manufacturer shall submit to the Engineer certified dimension prints showing nameplate data and outline dimensions within three weeks of the date they receive the order.
- B. Guarantee: All equipment furnished and installed under this Section shall be guaranteed against defects of workmanship, materials and improper installation for a period of one year from date of acceptance. All such equipment or parts proven defective, due to the above noted causes, shall be replaced in the machines by the Contractor at no expense to the Owner.
- C. Provide equipment warranty in accordance with Section 01740: Warranties and Bonds.

PART 2 - PRODUCTS

2.01 RATING

- A. Unless otherwise noted, all motors shall be of the low voltage type. All motors 1/2 through 100 horsepower shall be rated 230/460 volt, 3 phase, 60 Hertz A.C.; motors 125 horsepower through 500 horsepower shall be rated 460 volt, 3-phase, 60 Hertz, and motors below 1/2 horsepower shall be rated 115/230 volt, 1 phase, 60 Hertz A.C.

2.02 THREE PHASE INDUCTION MOTORS

- A. Motors 20 HP and larger shall have a 120-volt space heater for moisture control.
- B. Unless specifically noted in other sections of these Specifications, all motors shall have a minimum as indicated in the table below. All motors shall be "premium efficiency" type.
- C. Motors operating with variable frequency drives shall state that they are suitable for their intended applications. Motor nameplate shall read "Inverter Duty Rated".
- D. In addition, Motors operating with Variable Frequency Drives (VFDs) shall meet the requirements of NEMA MG1 Part 31.

TABLE 1

Motor HP	Min. Eff.	Max. dba	Motor HP	Min. Eff.	Max. dba
1-2	84.0%	74	25-30	92.0%	92
3-5	86.5%	79	40-50	93.0%	97
7.5-10	90.2%	84	60-75	94.0%	100
15-20	91.0%	89	100	94.1%	102

E. All motors shall be provided with an imbedded winding temperature switch.

2.03 CONSTRUCTION

A. General:

- 1) All drip-proof and weather protected Type I motors shall have epoxy encapsulated windings. Totally enclosed motors shall not be encapsulated. Motors not readily available with encapsulated windings may be standard type. Motors exposed to the outside atmosphere shall be totally enclosed fan cooled (TEFC) unless otherwise specified.
- 2) Squirrel-cage rotors shall be made from high-grade steel laminations adequately fastened together and to the shaft or shall be cast aluminum or bar-type construction with brazed end rings.

B. Low Voltage, Three Phase Motors:

- 1) Motors shall be of the squirrel-cage or wound rotor induction type as noted. Horizontal, vertical solid shaft, vertical hollow shaft, normal thrust and high thrust types shall be furnished as specified herein. All motors shall be built in accordance with current NEMA, IEEE, ANSI and AFBMA standards where applicable. Motors shall be of the type and quality described by these Specifications, fully capable of performing in accordance with manufacturer's nameplate rating, and free from defective material and workmanship.
- 2) Motors shall have normal or high starting torque (as required), low starting current (not to exceed 600 percent full load current), and low slip.
- 3) Motors shall be totally enclosed fan-cooled construction with 1.15 service factor unless otherwise noted. Indoor motors shall be WPI unless otherwise noted.
- 4) Motors shall be suitable for operation in moist air with hydrogen sulphide gas present.
- 5) The output shaft shall be suitable for direct connection or belt drive as required.
- 6) Motors shall have a Class B non-hygroscopic insulation system. Class F insulation

may be used but shall be limited to Class B temperature rise.

- 7) All motors shall have a final coating of chemical resistant corrosion and fungus protective epoxy fortified enamel finish sprayed over red primer over all interior and exterior surfaces. Stator bore and rotor of all motors shall be epoxy coated.
- 8) All fittings, bolts, nuts, and screws shall be 316 stainless-steel. Bolts and nuts shall have hex heads.
- 9) All machine surfaces shall be coated with rust inhibitor for easy disassembly.
- 10) Conduit boxes shall be gasketed. Lead wires between motor frame and conduit box shall be gasketed.
- 11) Totally enclosed motors shall be provided with condensate drain hole and epoxy coated motor windings to protect against moisture.
- 12) Nameplates shall be stainless steel. Lifting lugs or "O" type bolts shall be supplied on all frames 254T and larger. Enclosures will have stainless steel screen and motors shall be protected for corrosion, fungus, and insects.
- 13) Low voltage, three phase motors shall be manufactured by General Electric, U.S. Motors, Westinghouse or approved equal.
- 14) Fractional Horsepower:
 - a. Fractional horsepower motors shall be rigid, welded-steel, designed to maintain accurate alignment of motor components and provide adequate protection. End shields shall be reinforced, lightweight die-cast aluminum. Windings shall be of varnish-insulated wire with slot insulation of polyester film, baked-on bonding treatment to make the stator winding strongly resistant to heat, aging, moisture, electrical stresses, and other hazards.
 - b. Motor shaft shall be made from high-grade, cold-rolled shaft steel with drive-shaft extensions carefully machined to standard NEMA dimensions for the particular drive connection.
 - c. For light to moderate loading, bearings shall be quiet all-angle sleeve type with large oil reservoir that prevents leakage and permits motor operation in any position.
 - d. For heavy loading, bearings shall be carefully selected precision ball bearings with extra quality, long-life grease, and large reservoir providing 10 years' normal operation without relubrication.
- 15) Integral Horsepower:
 - a. Motor frames and end shields shall be cast iron or heavy fabricated steel of such design and proportions as to hold all motor components rigidly in proper position and provide adequate protection for the type of enclosure employed.
 - b. Windings shall be adequately insulated and securely braced to resist failure due to electrical stresses and vibrations.
 - c. The shaft shall be made of high-grade machine steel or steel forging of size and design adequate to withstand the load stresses normally encountered in motors of the particular rating. Bearing journals shall be ground and polished.

- d. Rotors shall be made from high-grade steel laminations adequately fastened together, and to the shaft. Rotor squirrel-cage windings may be cast-aluminum or bar-type construction with brazed end rings.
- e. Motors shall be equipped with vacuum-degassed antifriction bearings made to AFBMA Standards and be of ample capacity for the motor rating. The bearing housing shall be large enough to hold sufficient lubricant to minimize the need for frequent lubrication, but facilities shall be provided for adding new lubricant and draining out old lubricant without motor disassembly. The bearing housing shall have long, tight, running fits or rotating seals to protect against the entrance of foreign matter into the bearings, or leakage of lubricant out of the bearing cavity.
- f. Bearings of high thrust motors will be locked for momentary upthrust of 30% downthrust. All bearings shall have a minimum B10 life rating of 100,000 hours in accordance with AFBMA life and thrust values.
- g. Vertical hollow-shaft motors will have nonreverse ratchets to prevent backspin.

C. Low Voltage, Single Phase Motors:

- 1) Single phase motors shall be split-phase and capacitor-start induction types rated for continuous horsepower at the rpm called for on the Drawings. Motors shall be rated 115/230 volts, 60 Hertz, single phase, open drip-proof, or totally enclosed fan cooled as called for on the Drawings, with temperature rise in accordance with NEMA Standards for Class B insulation.
- 2) Totally enclosed fan cooled motors shall be designed for severe-duty.
- 3) Motors shall have corrosion and fungus protective finish on internal and external surfaces. All fittings shall have a corrosion protective plating.
- 4) Mechanical characteristics shall be the same as specified for polyphase fractional horsepower motors.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Motor Connections: All motors shall be connected to the conduit system by means of a short section 18-inch minimum of flexible conduit unless otherwise indicated. For all motor connections, the Contractor shall install a grounding conductor in the conduit and terminate at the motor control center with an approved grounding clamp.

3.02 TESTS AND CHECKS

- A. The following tests shall be performed on all motors after installation but before putting motors into service.
 - 1) The Contractor shall megger each motor winding before energizing the motor, and, if insulation resistance is found to be low, shall notify the Engineer and shall not energize the motor. The following table gives minimum acceptable insulation resistance in megohms at various temperatures and for various voltages with readings being taken after one minute of megger test run.

Table 2

Degree Winding Temperature		Voltage			
F	C	115V	230V	460V	4,160V
37	3.9	60	108	210	1,700
50	10	32	60	120	1,000
68	20	13	26	50	460
86	30	5.6	11	21	195
104	45	2.4	4.5	8.8	84
122	50	1	2	3.7	35
140	60	.5	.85	1.6	15

- 2) The Contractor shall check all motors for correct clearances and alignment and for correct lubrication and shall lubricate if required in accordance with manufacturer's instructions. The Contractor shall check direction of rotation of all motors and reverse connections if necessary.

B. The following tests shall apply to the medium voltage motors:

- 1) See Paragraph 2.03 B.2 for test requirements.
- 2) All motors shall be given the standard short commercial test prior to shipment. This shall consist of no-load current, check current balance, winding resistance, air gap measurement, high potential tests, and bearing inspection. Six (6) copies of the certified short commercial test shall be mailed to the Engineer prior to shipment.

END OF SECTION

SECTION 16450 - GROUNDING SYSTEM

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Furnish and install a complete grounding system in strict accordance with Article 250 of the National Electrical Code and as hereinafter specified and shown on the Drawings.

1.02 RELATED WORK

- A. Wire shall be as specified under Section 16120.
- B. Conduit shall be as specified under Section 16110.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Ground rods: Ground rods shall be copperclad steel 5/8-inch x 20 foot. Ground rods shall be Copperweld or be an approved equal product. Install ground grid at new electrical building as shown on the plans.

PART 3 - EXECUTION

3.01 GENERAL

- A. The service entrance equipment ground bus shall be grounded to the ground grid as indicated on the Drawings and to the building steel. The protecting conduits shall be bonded to the grounding conductor at both ends. The CONTRACTOR shall not allow the water pipe connections to be painted. If the connections are painted, they shall be disassembled and remade with new fittings.
- B. Ground bus in all motor control centers shall be connected to the service entrance equipment ground bus with a No. 1/0 conductor.
- C. All steel building columns shall be bonded together and connected to the building ground grid and to the service entrance ground with #3/0 copper conductor. The bond wire for all well pumps shall be connected to the well pump casing via Cadweld.
- D. Conduits stubbed-up below a motor control center shall be fitted with insulated grounding bushings and connected to the motor control center ground bus. Boxes mounted below motor control centers shall be bonded to the motor control center ground bus. The grounding wire shall, unless otherwise indicated on the drawings, be sized in accordance with Table 250-122 of the National Electrical Code, except that a minimum No. 12 AWG shall be used.
- E. Motors shall be grounded as specified in Section 16150 and as shown on the electrical drawings.
- F. Lighting transformer neutrals shall be grounded to a grounding electrode and the service entrance ground.
- G. Grounding electrodes shall be driven as required. Where rock is encountered, grounding plates may be used in lieu of grounding rods.

- H. All equipment enclosures, motor and transformer frames, conduits systems, cable armor, exposed structural steel and similar items shall be grounded.
- I. Exposed connections shall be made by means of approved grounding clamps. Exposed connections between different metals shall be sealed with No-Oxide Paint Grade A or approved equal. All buried connections shall be made by welding process equal to Cadweld.
- J. For reasons of mechanical strength, grounding conductors extending from the plant grounding grid to the ground buses of control centers and unit substations shall be No. 3/0 AWG.
- K. The plant grounding grid conductors shall be embedded in backfill material around the structures.
- L. All underground conductors shall be laid slack and where exposed to mechanical injury shall be protected by pipes or other substantial guards. If guards are iron pipe or other magnetic material, conductors shall be electrically connected to both ends of the guard.
- M. The CONTRACTOR shall exercise care to ensure good ground continuity, between the conduit system and equipment frames and enclosures. Where necessary, jumper wires shall be installed.

3.02 TESTS

- A. The CONTRACTOR shall test the ground resistance of the system. All test equipment shall be provided by the CONTRACTOR and approved by the Engineer. Dry season resistance of the system shall not exceed 5 ohms. If such resistance cannot be obtained with the system as shown, the CONTRACTOR shall provide additional grounding as directed by the Engineer, without additional payment. The Contractor shall submit all grounding system test results to the Engineer for review. The CONTRACTOR shall test the ground resistance of the system by 3-point method fall of potential.

END OF SECTION



ENGINEERING CONSULTANTS IN GEOTECHNICAL • ENVIRONMENTAL • CONSTRUCTION MATERIALS TESTING

November 20, 2014
Project No. 14-1729.24.2

Mr. Lewis Bryant, P.E.
Kimley Horn & Associates
1823 SE Fort King Street
Ocala, Florida 34471

**Project: Proposed Water Well & Treatment Facility, Ashley Parcel, City of Wildwood, Florida
Geotechnical Site Exploration**

Dear Mr. Bryant:

As requested, Geo-Technologies, Inc. (Geo-Tech) has performed a supplemental site exploration at the project site. Services were conducted in accordance with our Proposal No. 5615 Rev. A dated July 15, 2014.

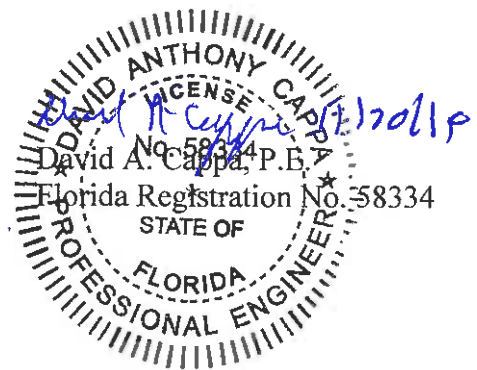
The following report summarizes our findings, evaluations and recommendations. Generally accepted soils and foundation engineering practices were employed in the preparation of this report. The borings were performed in the proposed building location. It should be noted these locations were overgrown in a heavily wooded area which was not conducive to Electric Resistive test methods. This report is supplemental to Geo-Tech's report number 14-1729.24.1, entitled "Proposed Water Well and Treatment Facility, Ashley Parcel, City of Wildwood," dated September 12, 2014.

Geo-Tech appreciates the opportunity to provide our services for this project. Should you have any questions regarding the contents of this report or if we may be of further assistance, please do not hesitate to contact the undersigned.

Sincerely,

Gerald W. Green, Jr.
Soil & Water Scientist

GWG/DAC/je



Purposes of Exploration

Purposes of this study were to explore the subsurface conditions in the existing tank, utility building and generator pad areas and provide geotechnical engineering site preparation recommendations to guide design and construction of the building foundations systems.

Site Description

The project site is located at the northwest corner of the intersection at County Road 231 and State Road 44 in Wildwood, Florida. At the time of our site exploration, the project site was covered with native trees and grasses.

Exploration Program

Field exploration services for the geotechnical exploration consisted of the following:

- Three (3) Standard Penetration Test (SPT) borings (B-1 thru B-3) to depths ranging from approximately thirty (30) to forty-five (45) feet below existing site (ASTM D-1586). SPT borings were performed on October 9, and 27, 2014.

Standard Penetration Testing & Sampling Description

A Standard Penetration Test (SPT) boring (ASTM D-1586) is defined as a standard split-barrel sampler driven into the soil by a one hundred and forty (140) pound hammer falling thirty (30) inches. The number of blows required to drive the sampler one (1) foot, after seating six (6) inches, is designated resistance, or "N"-Value is an index to soil strength and consistency.

Samples recovered during performance of our SPT borings were visually classified in the field and representative portions of the samples were placed in containers and transported to our laboratory for further analysis.

Findings

Boring locations and general subsurface conditions found in our soil borings (B-1 thru B-7) at the locations indicated on the site plan to the existing structure are graphically presented on the soil profiles in Appendix III. Horizontal lines designating the interface between differing materials found represent approximate boundaries. Transition between soil layers is typically gradual.

Soils found at our boring locations generally consisted of a surficial layer of fine sand approximately one and one-half (1 ½) feet thick underlain by clayey sand, slightly sandy clay and limestone to the depths drilled.

Ground water table levels were found at our boring locations within ten (10) feet of the surface. After the upper ten (10) feet has been drilled, fluid is used for advancing the borehole and accurate determination of the groundwater table is not possible.

Evaluations

Geo-Tech observed indications of sinkhole type activity in borings B-1 and B-2 at depths ranging from approximately thirteen and one-half (13 ½) to sixty-six (36) feet below existing site grade. As a sinkhole develops the loose zones propagate upward to the ground surface. Upward movement can cause very loose zones such as those found at our boring locations. These very loose zones can cause settlement to structures found above them.

Most sinkhole activity in Florida is the result of subterranean erosion or “raveling” of the soils into solution channels and cavities in the underlying limestone formation. The process of internal erosion is generally caused by downward seepage of groundwater (recharge) into the limestone aquifer. Recharge occurs when there is a hydraulic connection through the confining beds and a difference in piezometer level between the surficial and limestone aquifers. Under certain circumstances, soil particles will migrate downward during the groundwater recharge process and a subsoil structure will erode. With time, “raveled” conditions can propagate upward and cause a sinkhole at the surface. In some instances, sinkhole activity is manifested at the surface as a shallow depression or minor settlement of the foundation soils which develop gradually rather than a sudden collapse. Typical indicators of sinkhole conditions encountered during the drilling of Standard Penetration Test borings are zones of abnormally soft and/or “raveled” subsoil generally accompanied by loss of drilling fluid circulation.

In addition, the clayey sand and slightly sandy clay soils found at our boring locations typically exhibit moderate to high shrink/swell behavior with moisture content changes. Generally, these clay soils will swell upon wetting and shrink upon drying thus causing movement of structures placed on them.

Recommendations

Geo-Tech recommends remediation of the sinkhole type activity found to consist of deep soil stabilization by means of low slump, sand-cement grout. Twenty-one (21) injection pipes should be installed fifteen (15) foot centers at locations presented on the Compaction Grout Injection Plan presented in Appendix II. Grout shall be utilized to seal the loose zones extending to the limestone strata to depths of about twenty (20) to forty (40) feet below the existing site grade. Depending on grout intakes additional injection points may be added. Grout mix specifications and pumping procedures are presented in Appendix I. The Grouting Contractor should make all submittals to Geo-Tech for approval.

Based on preliminary estimations, Geo-Tech would expect grout quantities for this project to range between ninety (90) and one hundred and twenty (120) cubic yards.

Upon completion of the compaction grouting program, Geo-Tech recommends soils in the proposed tank and utility building areas are overexcavated to a depth of three (3) feet below existing site grade. Soils in the generator pad area should be overexcavated to a depth of four (4) feet below existing site grade. Overexcavations should extend to four (4) feet outside the proposed foundation areas. The bottoms of the overexcavated areas should be proof-rolled in accordance with the Proof-Rolling section of this report. A four (4) ounce geotextile should then be placed in the bottom of the overexcavated areas. Backfilling of the overexcavated areas should be performed in accordance with the Structural Fill Specifications and Compaction of Fill Soils sections of this report. It should be noted that dewatering may be necessary.

Proof-Rolling

Proof-rolling of the cleared surface is recommended to: 1) locate any soft areas or unsuitable surface or near surface soils; 2) increase the density of the near surface soils; and 3) prepare the existing surface for the addition of fill soils (if required). Proof-rolling of the building areas should consist of at least ten (10) passes of a self-propelled static compactor. Each pass of the compactor should overlap the preceding pass by thirty (30) percent to insure complete coverage. If deemed necessary, in areas continuing to “yield,” remove all deleterious material and replace with a clean, compacted sand backfill. Proof-rolling should occur after cutting and before filling. Vibratory compaction equipment should not be used within one-hundred (100) feet of neighboring structures.

Structural Fill Material

Structural fill material should be free of organic material such as roots and/or vegetation. Geo-Tech recommends using sand fill with between three (3) to twelve (12) percent by dry weight of material passing the U.S. Standard No. 200 sieve size. All structural fill should be pre-qualified prior to importing and placing.

Upper fine sands found on site should meet these requirements and can be used if kept separate from the clayey soils during the earthwork phase of construction. Clayey soils are typically not used for structural fill due to inherent nature to retain moisture and the natural weight of the material makes compaction requirements difficult to achieve. However, the clayey soils can be utilized for other non-structural grading as desired.

Compaction of Fill Soils

Structural fill should be placed in level lifts not thicker than twelve (12) inches (uncompacted). Each lift in the proposed building areas should be compacted to at least ninety (95) percent of the maximum density as determined by the Modified Proctor Test Method (ASTM D-1557) maximum dry density value. If hand-held compaction equipment is used, reduce the uncompacted lift thickness to six (6) inches. Filling and compaction operation should continue in lifts until the desired elevation is attained.

Closure/General Qualifications

This report has been prepared in order to aid evaluation of the project site and to assist various design professionals in the design of the foundation systems. The scope is limited to the specific project and the location described herein, and our description of the project represents our understanding of the significant aspects relevant to soil and foundation characteristics. In the event that any changes in present project concepts as outlined in this report are planned, we should be informed so the changes can be reviewed and the conclusions of this report modified as necessary in writing by the soils and foundation engineer.

It is recommended that all construction operations dealing with earthwork and foundations be reviewed by our soil engineer to provide information on which to base a decision whether the design requirements are fulfilled in the actual construction. Evaluations and recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated on the Boring Location Map, and from any other information discussed in this report. This report does not reflect any variations, which may occur between these borings. In the performance of subsurface investigations, specific information is obtained at specific

locations at specific times. However, it is a well known fact that variations in soil and rock conditions exist on most sites between boring locations. Groundwater levels may also vary from time to time. The nature and extent of variations may not become evident until the course of construction. If variations then appear evident, it will be necessary for a re-evaluation of the recommendations of this report after performing on-site observations during the construction period and noting the characteristics of any variations.

APPENDIX I

COMPACTION GROUTING SPECIFICATIONS

COMPACTION GROUT INJECTION PLAN

APPENDIX I COMPACTION GROUTING SPECIFICATIONS

General

The following grouting specifications are for stabilization and improvement of deep subsoil conditions around the perimeter of the proposed Water Well Treatment Plant on State Road 44 in Wildwood, Florida.

Scope

The scope of work consists of furnishing all labor, equipment and materials and performing all work connected with the injection of the cementaceous grout to fill, seal and stabilize soft soils between depths of approximately twenty (20) to forty (40) feet below existing site grade.

Subsurface Soil Stabilization

The subsurface soils stabilization program shall consist of pumping sand-cement grout with suitable chemical additives at the depths indicated and at pressures necessary to fill, stabilize and cement the soft soil to minimize the potential for future subsidence. Based on the available information, Geo-Tech estimates that between ninety (90) and one hundred and twenty (120) cubic yards of grout will be utilized for this project.

Contractor

The Pressure Grouting Contractor shall submit his qualifications to the Soil Engineer and Owner. The Contractor shall have at least five (5) years of experience in similar deep and shallow grouting jobs, and shall submit references of his activities. If requested by the Engineer, the resume of the field superintendent will also be provided. Prior to mobilization to the site and beginning work, the Contractor shall submit a project schedule and injection layout plan to Geo-Tech for approval. The Contractor shall also provide sufficient labor and equipment to ensure the project site is protected from pedestrians and non-essential construction vehicles by means of caution tape and/or protective fencing in order to provide a safe working environment for construction and non-construction personnel.

Equipment

- a. **Grout Injection Equipment:** A continuous flow, positive displacement model with a pugmill type mixing vat having a minimum shaft speed of sixty (60) rpm and incorporated as an integral part of the "mudjack" equipment. Alternate equipment may be used at the discretion of the Soil Engineer.
- b. **Mixer:** (If On-Site Mixing is Used) Machine driven rotary mixer with a minimum seven (7) cubic foot capacity; agitate during pumping operations.
- c. **Injection Pipes:** Minimum diameter two (2) inch I.D., Maximum Diameter four (4) inch I.D.
- d. **Pressure Gauge:** Sufficient size (4-inch face) in order to be legible while monitoring grouting pressures from a safe distance.

Grout Mixture

- a. The mixture used for grouting shall be a creamy consistency which will permit the grout mixture, when set aside in a standard concrete test mold, to show less than one percent of the mixture height of free water on the surface after standing not less than twelve (12) hours. The grout mixture shall have a time of efflux (ASTM C939-81) greater than thirty-five (35) seconds. Either of the following mixtures may be used, subject to minor variation of any of the constituents if found necessary to meet the above requirements.

For 1 c.y. yield

		<u>Mix A</u>	<u>Mix B</u>
Fly Ash (Gs = 2.5)	-	500 pounds	---
Cement (Gs = 3.15)	-	500 pounds	900 pounds
Water	-	55 gallons	55 gallons
Sand (Gs = 2.65)	-	2,300 pounds	2,300 pounds
Darex (or equal)	-	1 ounce	1 ounce
WRDA-79 (or equal)	-	45 ounces	45 ounces

- b. One set of three (3) 6"x12" or 4"x8" sample test cylinders shall be made for each mix preparation.

Grout Mixture and Placing

If on-site mixing is used, facilities shall be provided for accurately measured the ingredients in each batch of grout. Ingredients shall be thoroughly mixed and immediately pumped to the grouting needles through a flexible hose connection not more than two hundred fifty (250) feet long.

Pressure Grouting Procedure

- a. The scope of this stabilization program includes vertical and angled grout injections at locations on about eight (8) to ten (10) centers. However, the program may be modified by the Soil Engineer as dictated by the actual field conditions encountered. If directed by the Soil Engineer, some injection locations may be deleted and/or alternate locations may be added to the program.
- b. Grout needles shall be installed to a depth sufficient to encounter refusal conditions approximately twenty (20) to forty (40) feet below existing site grade. The Contractor shall rotary drill (using a Bentonite slurry) the injection pipes to a minimum depth of fifteen (15) feet and then either drill or drive, at the discretion of the Soil Engineer, to the refusal depth. Any other method of installation shall not be accepted unless approved by the Engineer.
- c. Following satisfactory installation of the injection pipes, grouting operations may begin. The rate of pumping shall not exceed six (6) cubic feet per minute. Pumping pressures are planned to be in the range of one-hundred (100) to one-hundred fifty (150) psi at the tip of the casing. The in-line pressure gauge is to be of sufficient size, in order to be legible while monitoring grouting pressures from a safe distance (4-inch face).

- d. Upon completion of the deep stabilization, shallow grouting may be performed, at the discretion of the soil engineer, to re-level concrete slabs, footings, or other structures.
- e. All grouting operations shall be monitored by a representative of Geo-Technologies, Inc.

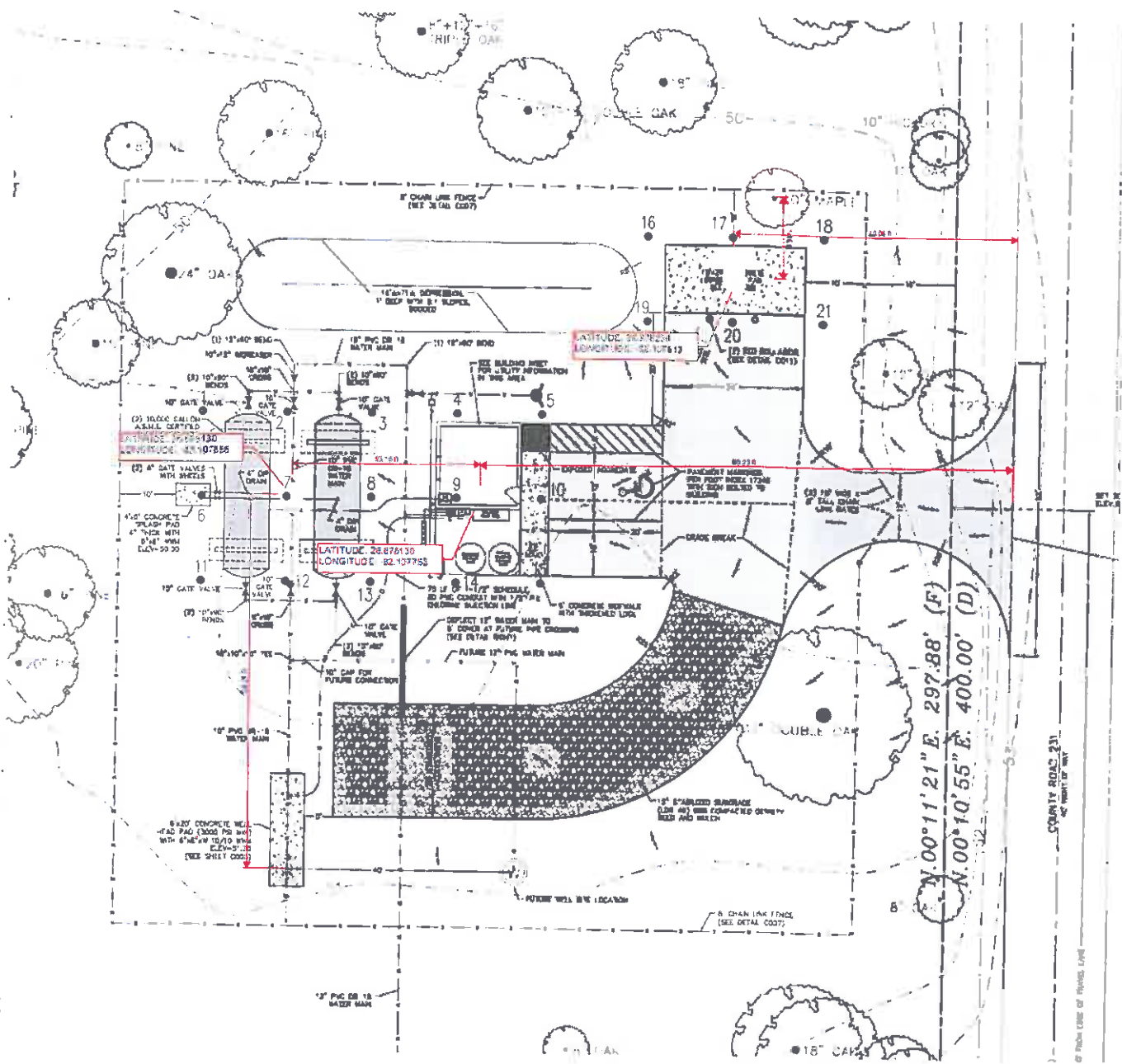
Monitoring by Soil Engineer

The Soil Engineer will monitor the pressure grouting operations and will represent the Owner to assure compliance with the specifications outlined above and the duties discussed below. The Soil Engineer (Geo-Technologies, Inc.) shall recommend intervals of grouting and shall decide if additional or less grout is necessary.

- a. The Soil Engineer can stop the grouting operation at any time, if, in his judgment, the operation does not comply with the specifications or the work is unsuitable and will not be responsible for damage to the lawn; landscape areas or structures due to grouting procedures.
- b. The Soil Engineer will make all measurements of grout heave, settlement, and quantity pumped. The Soil Engineer will maintain records of each day's grouting operation for the benefit of the Owner and Contractor. The quantity recorded by the Engineer shall be considered the final amount of grout pumped for pay purposes. The Contractor will be responsible for laser equipment necessary to monitor at least three (3) locations continuously during the grout procedure for each injection point.
- c. During grouting, the Soil Engineer shall observe any vertical movement of the ground. If a momentary downward movement is observed, the grouting operation shall cease and observations shall continue for thirty (30) minutes. If the ground does not return to its original grade, pumping shall be resumed at a lower rate of discharge. If upward movement is observed, the grouting operation shall cease.
- d. The Contractor shall exercise care when grouting beneath and adjacent to existing structures. The Contractor is responsible for ensuring that the grouting operation does not cause unnecessary damage to existing structures.
- e. When grout injection points are fifteen (15) feet or shallower, measured from existing grade, the Engineer should be notified. These points may be abandoned or relocated after meeting with the Engineer.
- f. Pressure grouting will continue until the bottom of the pin is within ten (10) feet of the existing ground surface. At this point, pressure grouting will be stopped unless otherwise directed by the Engineer or his representative.

Method of Payment

The Contractor shall submit an injection location plan. Pipe lengths are estimated to average approximately twenty (20) to forty (40) feet each, but may vary depending on field conditions. Unit prices per cubic yard of grout, per foot for pipe installation/removal, and per day of shallow grouting shall be applicable to quantities over or under the estimated amounts.



● = PROPOSED COMPACTION GROUT INJECTION LOCATION

KIMLEY HORN & ASSOCIATES, INC.
 ASHLEY WTP
 COUNTY ROAD 231
 WILDWOOD, FLORIDA

COMPACTION GROUT INJECTION PLAN

GEO-TECH, INC.

■ GEOTECHNICAL ■ ENVIRONMENTAL
 ■ CONSTRUCTION MATERIALS TESTING ■ GEOPHYSICAL EXPLORATION
 1016 SE 3rd AVENUE, Ocala, FLORIDA 34471 ~ (352) 694-7711

PROJECT NO.
 14-1729.24.2

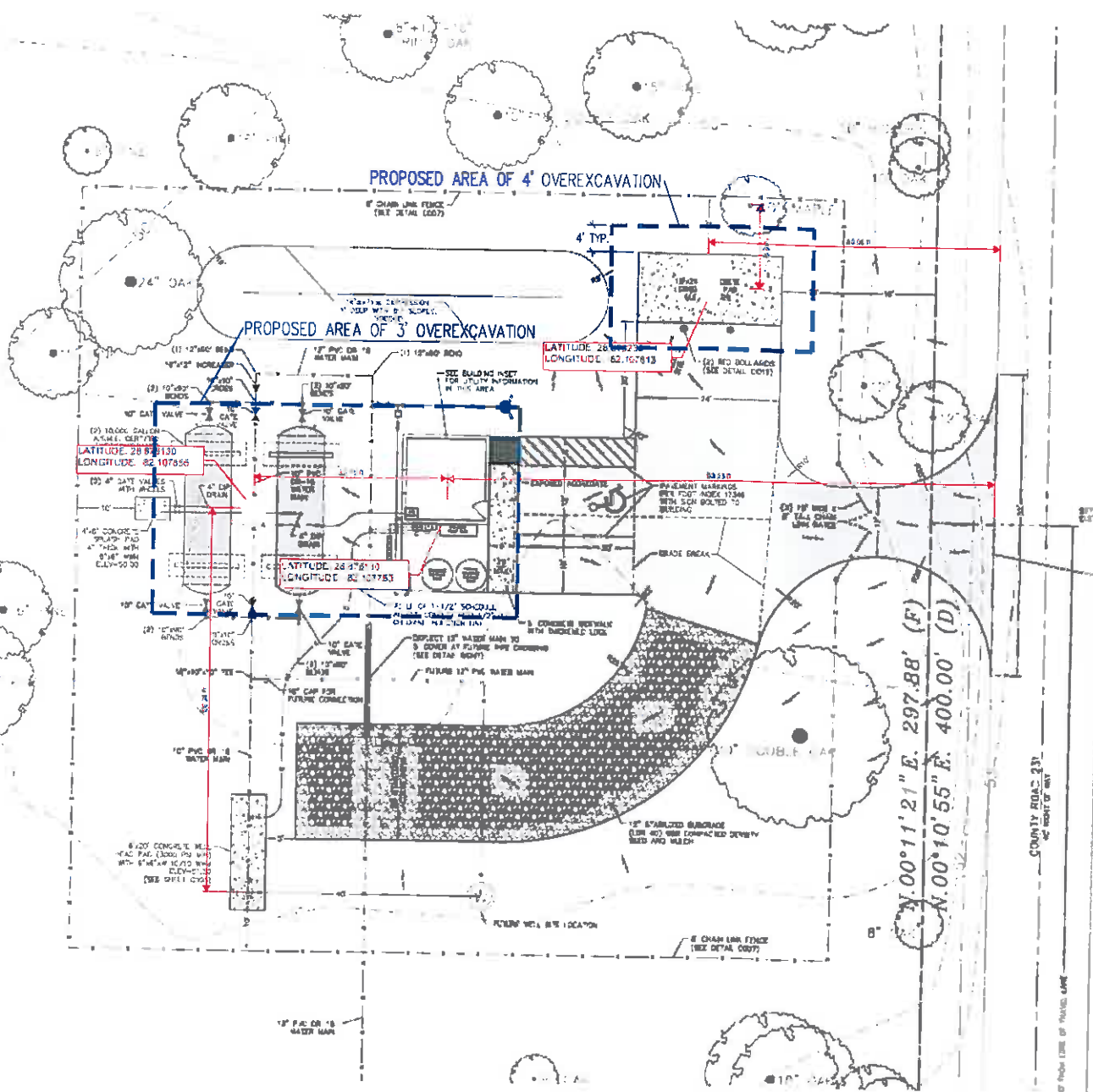
SCALE: N.T.S.

DATE: 11-21-14

Appendix A - Page 11 of 20

FIGURE 1

APPENDIX II
OVEREXCAVATION PLAN
SEPARATION DETAIL



KIMLEY HORN & ASSOCIATES, INC.

ASHLEY WTP
 COUNTY ROAD 231
 WILDWOOD, FLORIDA

OVEREXCAVATION PLAN

GEO-TECH, INC.

■ GEOTECHNICAL ■ ENVIRONMENTAL
 ■ CONSTRUCTION MATERIALS TESTING ■ GEOPHYSICAL EXPLORATION
 1016 SE 3rd AVENUE, OCALA, FLORIDA 34471 ~ (352) 894-7711

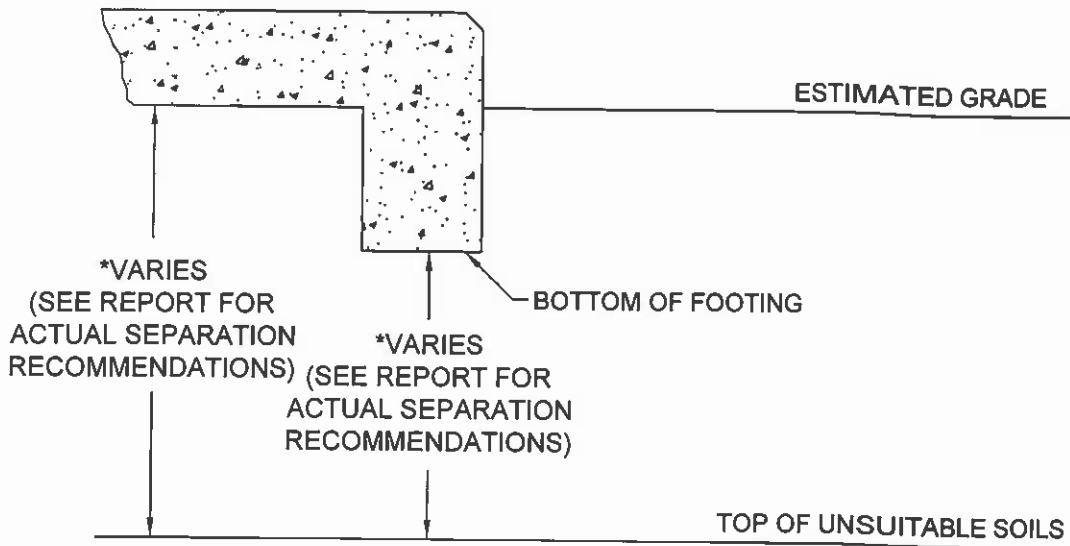
PROJECT NO.
 14-1729.24.2

SCALE: N.T.S.

DATE: 11-21-14

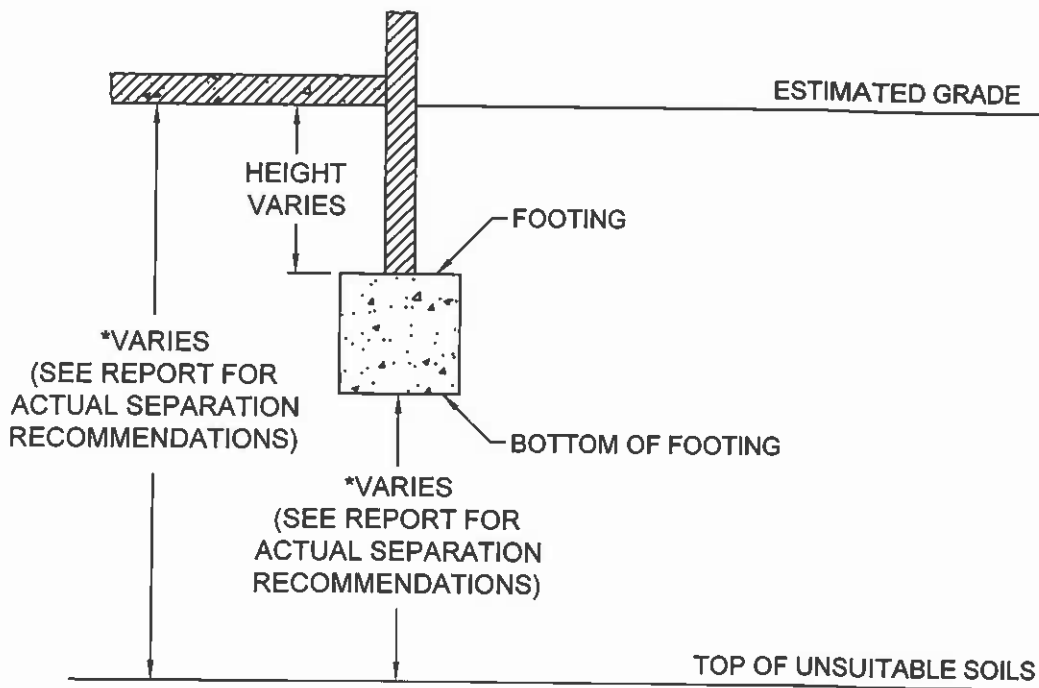
Appendix A - Page 13 of 20

2



MONOLITHIC FOOTING DETAIL

NOT TO SCALE



STEM WALL FOOTING DETAIL

NOT TO SCALE

*MAY VARY DEPENDING UPON CONSTRUCTION TECHNIQUE

SEPARATION DETAIL

APPENDIX III
SOIL PROFILES

Log of Borehole: B-1

GEO-TECH, NC

ENGINEERING CONSULTANTS

1018 SE 3rd Avenue

Ocala, Florida

352.e94.n11

WWW.GEOTECHFL.COM

Project: ASHLEYWTP, CR 231, WILDWOOD, FLORIDA

Project No: 14-1729.24.2

Boring Location: SEE SITE PLAN

Engineer: NJH/DAC

Client: KIMLEY-HORN & ASSOCIATES, INC.

Enclosure: SITE PLAN

Depth	Symbol	Description	Consistency	Depth/Elev	Number	Type	Blows	Standard Penetration Test N-Values BOJQ
0		==== Ground Surface ---- 1						
1		FINE SAND						
2		BROWN TO LIGHT BROWN FINE SAND (SP)	HAND AUGERED					
3								
4			LOOSE		1		10	10
5			LOOSE		2		6	6
6			MEDIUM DENSE		3		11	11
7								
8								
9								
10				13.5				
11								
12								
13								
14		CLAYEY SAND	LOOSE		4		7	7
15		GREY CLAYEY SAND (SC)						
16								
17			VERY LOOSE		5		3	3
18								
19								
20								
21								
22			WOH (24.0'-29.0')		6		0	0
23								
24								
25								
26								
27								
28				29.0				
29		LIMESTONE	29 BLOWS - 12'		7		29	29
30		LIGHT BROWN LIMESTONE						
31								
32								
33								
34			WOR (33.5'-35.0')		8		0	0
35								
36								
37								
38								
39								
40			50 BLOWS - 2"	40.5	9		50	50
41								
42		End of Borehole						
43								
44								
45								
46								
47								

Ground Water Depth: APPROX. 2.0 FEET

Drill Date: OCTOBER 9, 2014

Drilled By: JWM/H/ZT

Drill Method: ASTM D-1586

Remarks: (SP) UNIFIED SOIL CLASSIFICATION SYMBOL AS DETERMINED BY VISUAL REVIEW

Soil Profile : 1 OF 3

Appendix A - Page 16 of 20

Log of Borehole: B-2

GEO-TECH, INC.
ENGINEERING CONSULTANTS
1018 SE 3rd Avenue
Ocala, Florida
352.694.7711
WWW.GEOTECHFL.COM

Project: ASHLEY WTP, CR 231, WILDWOOD, FLORIDA

Project No: 14-1729.24.2

Boring Location: SEE SITE PLAN

Engineer: NJ H/DAC

Client: KIMLEY-HORN & ASSOCIATES, INC.

Enclosure: SITE PLAN

Depth (ft)	Symbol	Description	Penetration	Depth/Elev.	Number	Type	Blows	Standard Penetration Test N-Values
								.0 40 6. 100
0		Ground Surface						
1		FINE SAND	HAND AUGERED					
2		BROWN TO LIGHT BROWN FINE SAND (SP)						
3								
4								
5			MEDIUM DENSE		1		15	
6								
7			MEDIUM DENSE		2		19	159
8								
9			VERY LOOSE		3		3	3
10								
11								
12								
13								
14			WOR (13.5'-17.5')		4		0	0
15								
16								
17				17.5				
18		LIMESTONE	50 BLOWS-6"		5		50	50
19		LIGHT BROWN LIMESTONE						
20								
21								
22								
23								
24			3 BLOWS -12"					
25								
26								
27								
28								
29			36 BLOWS - 12"		6		50	36
30								
31								
32								
33			WOR (33.5'-36.0')		7		0	0
34								
35								
36								
37								
38			4 BLOWS -12"		8		4	4
39								
40								
41								
42								
43								
44			45 BLOWS • 12"		10		45	45
45				45.0				
46		End of Borehole						
47								

Ground Water Depth: APPROX. 0.5 FOOT
Drill Date: OCTOBER 9, 2014

Drilled By: JW/WH/ZT
Drill Method: ASTM D-1586

Remarks: (SP) UNIFIED SOIL CLASSIFICATION SYMBOL AS DETERMINED BY VISUAL REVIEW

Soil Profile : 2 OF 3
Appendix A - Page 17 of 20

Log of Borehole: B-3

C=O-T=CH
1993, INC.

ENGINEERING CONSULTANTS
1016 SE 3rd Avenue
Ocala, Florida
352.694.7711
WWW.GEOTECHFL.COM

Project: ASHLEY WTP, CR 231, WILDWOOD, FLORIDA

Project No: 14-1729.24.2

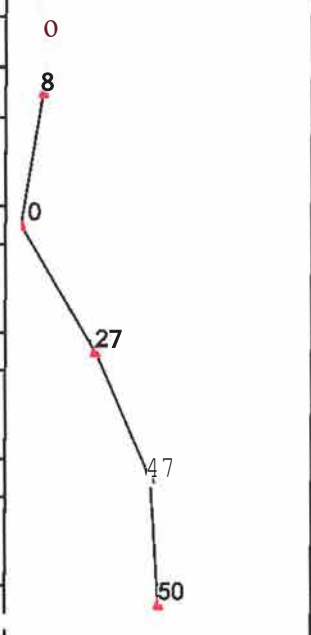
Boring Location: SEE SITE PLAN

Engineer: NJ H/DAC

Client KIMLEY-HORN & ASSOCIATES, INC.

Enclosure: SITE PLAN

Depth (ft)	Symbol	Description	Consistency	Depth/Elev. (ft)	Number	Type	Blow	Standard Penetration Test N-Values						
								40	60	10	100			
0		Ground Surface												
1-15		FINE SAND BROWN TO LIGHT BROWN FINE SAND (SP)	HAND AUGERED	15										
15-40		CLAYEY SAND LIGHT GREY AND LIGHT BROWN CLAYEY SAND (SC)	MEDIUM STIFF STIFF	40	1		6							
40-18.5		1/4 PASS 200 = JB SLIGHTLY SANDY CLAY LIGHT GREY AND LIGHT BROWN SLIGHTLY SANDY CLAY (CH)	MEDIUM STIFF	18.5	2		10							
18.5-19		% PASS -200 = 97	WOR (13.5-18.5)	18.5	3		8							
19-27		LIMESTONE LIGHT BROWN LIMESTONE	27 BLOWS - 12'	18.5	4		0							
27-47			47 BLOWS - 12'	18.5	5		27							
47-30.0			50 BLOWS - 5'	30.0	6		47							
30.0-50		End of Borehole		30.0	7		50							



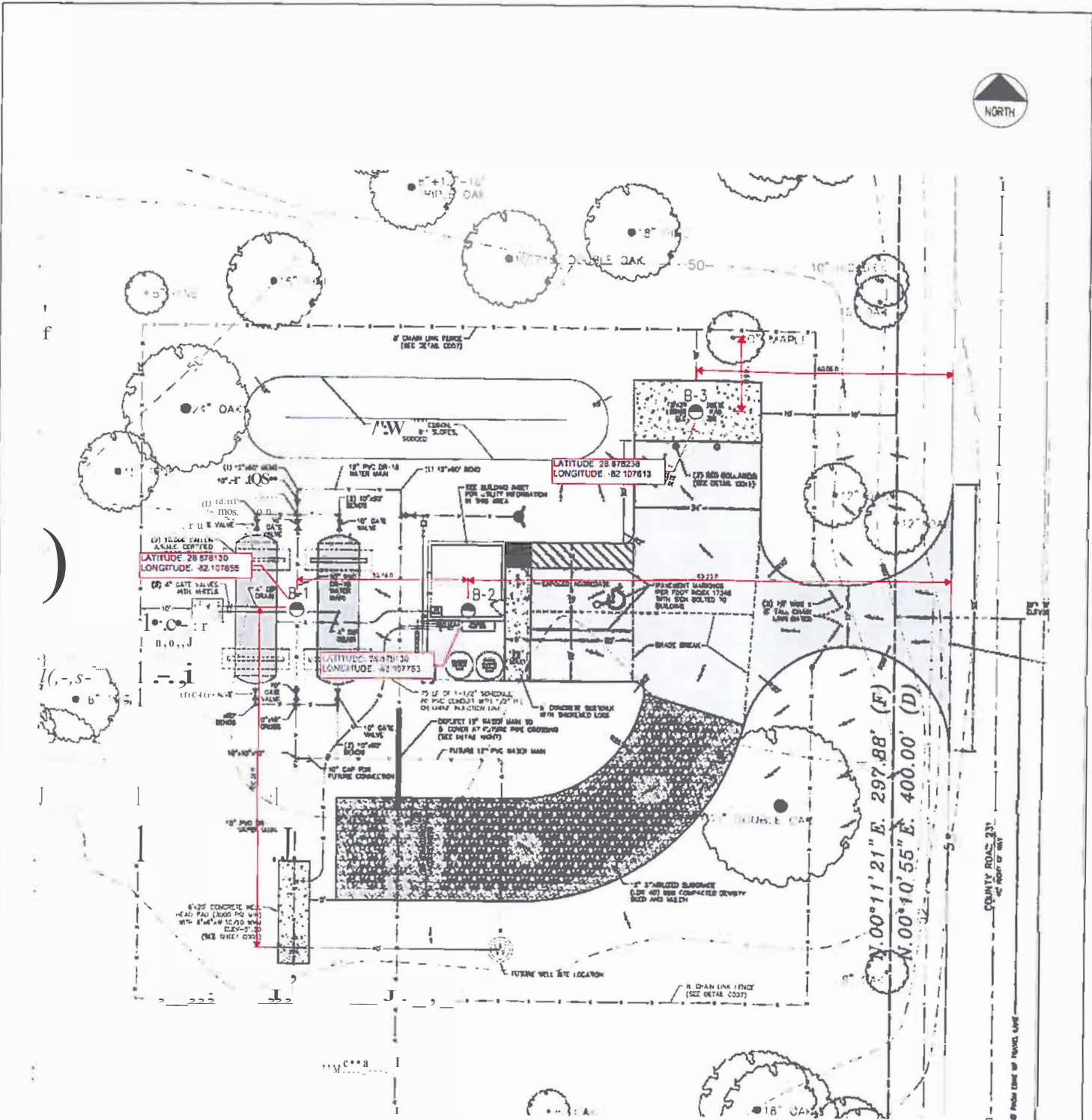
Ground Water Depth: APPROX. 0.5 FOOT
Drill Date: OCTOBER 27, 2014

Drilled By: JWW/H/ZT
Drill Method: ASTM D-1586

Remarks: (SP) UNIFIED SOIL CLASSIFICATION SYMBOL AS DETERMINED BY VISUAL REVIEW

Soil Profile: 3 OF 3

APPENDIX IV
BORING LOCATION MAP



e = APPROXIMATE STANDARD PENETRATION TEST (SPT) BORING LOCATION

KIMLEY HORN & ASSOC.: L.L.P.

ASHLEY WTP
 COUNTY ROAD 231
 WILDWOOD, FLORIDA

EBORING LOCATION MAP

GEO-TECH, INC.

■ GEOTECHNICAL ■ ENVIRONMENTAL
 ■ CONSTRUCTION MATERIALS TESTING ■ GEOPHYSICAL EXPLORATION
 1016 SE 3rd AVENUE, OCALA, FLORIDA 34471 • (352) 694-7711

PROJECT NO.
 14-1729.24.2

SCALE: N.T.S.

DATE: 11-21-14

FIGURE: 3

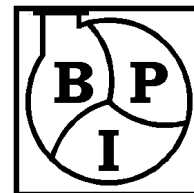
**APPENDIX B-PREORDERED EQUIPMENT
WILDWOOD ASHLEY WATER TREATMENT PLANT WELL NO. 2 WELL PUMP
ADDITION**

The City of Winning bidder shall be responsible for transportation and installation of preordered equipment as summarized below. Manufacturer shall warrantee preordered equipment. Any and all materials not listed will be the responsibility of the winning bidder.

- **40 HP Fairbanks Vertical Turbine Pump and appurtenances (Detailed List in Appendix C)**
- **Pump Control Panel, Field Equipment, Spare Parts, and electrical services (Detailed List in Appendix D)**
- **Chemical Metering Pump and associated equipment.**

QUOTATION NUMBER
1003386 Rv1

BARNEY'S PUMPS INC.



P.O. Box 3529 Lakeland, FL 33802-3529
2965 Barney's Pumps Place Lakeland, FL 33812-4209
Phone (863) 665-8500
Fax (863) 666-3858

DATE: January 25, 2023

TO: City of Wildwood

FOR SHIPMENT TO: Wildwood, Florida

ATTN: Jason Martin

PROJECT: **Well Pump**

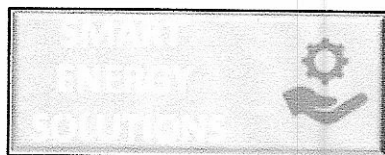
Delivery Via From F.O.B. Terms
Bestway Barney's Pumps Barney's Pumps Net 30 with Approved Credit

QTY	DESCRIPTION	PRICE
1	Fairbanks 10M-SS 5 stage Vertical Turbine COS: 464 GPM @ 213.9' TDH Fabricated steel 6in discharge head with ISC 2 cartridge type mechanical seal 60 ft threaded carbon steel column 6in diameter 5 stage cast iron bow assembly with 316 ss impeller and suction strainer 1-1/2" 316 SS lineshaft with vesconite bearings	
1	US Motors 40HP, 60 HZ 1800 RPM, 230/460V 3Ph Vertical hollow shaft 324TP Frame with TEFC enclosure	
1	NSF approved coating on exterior and interior of bowl, column, and discharge head	
<p>Delivery is F.O.B. Barney's Pumps with freight allowed to jobsite. Barney's Pumps standard terms of sale and warranty apply. Taxes, anchor bolts, piping, field wiring, etc. are not included.</p>		

Prices quoted are firm for 30 days (unless otherwise noted), then subject to adjustment to agree with prices at time of shipment and subject to any tax required by law. We appreciate the opportunity to serve you and trust that we are favored with your order. This quotation is subject to Barney's Pumps standard terms of sale and warranty.

BARNEY'S PUMPS INC.
Tony Collins

Authorized Signature



June 6, 2022

City of Wildwood
1290 Unit B Industrial Dr
Wildwood, FL 34785

Re: Wildwood Ashlie WTP Well #2 Addition

Dear Mr. Mark Odell

In accordance with the attached Terms and Conditions, Smart Energy Solutions is pleased to offer the following materials and services for the above referenced project. Your signature on this agreement will serve as your letter of intent. Smart Energy Solutions will proceed upon receipt of an official purchase order. Our scope of work will include the following:

Well #2 Pump Control Panel, 480 Vac, 3 phase, 65 KAIC Rated

Nema type 12 painted steel with back panel
Incoming power surge arrestor, 480 Vac 3 Phase
Phase monitor
Main circuit breaker with disconnect operator
(1) Reduced voltage soft starter, 65 amperes minimum 480 Vac 3 phase
(3) RVSS fuses
(1) Isolation contactor
(1) Bypass contactor
(1) Motor contactor
Control power transformer with primary/secondary fuses
Motor heater circuit, 120 Vac
24 Vdc power supply
(1) Selector switch, Well #2, H-O-A
(1) Pushbutton, Reset
(1) Pilot Light, Well #2 Run
(1) Pilot Light, Well #2 Fail
(1) Pilot Light, Well #2 Over Temperature
(1) Run time meter
(AR) Time delay relays
(AR) Control relays
(AR) Fuse holders and terminals
Misc. panel components, nameplates, wire duct, terminals, etc.

Field Equipment

- (2) Pipe mount surge arrestor, 4-20 mA (PIT)
- (1) Submersible pressure transmitter, 0-50 psi 125' cable
- (1) Flowmeter with transmitter, 8"
- (1) Nema 4X 304 SS operator station, Off – Remote
- (1) Nema 4X 304 SS Motor termination junction box
- Pressure switch, to be mounted and wired into existing Pressure Control Panel

Spare Parts

- DC power supply
- (2) Analog surge arrestors
- (2) AC surge arrestor
- (2) Pipe mount surge arrestor, 4-20mA
- (5) Fuses each type used
- (5) Indicator bulbs, each type used
- (10) Corrosion inhibitor
- (3) RVSS fuses
- (2) Relays/Timers, each type used

Services:

1. Engineering associated with the equipment and materials listed above.
2. PLC/HMI programming associated with the equipment and materials listed above.
3. Start-up and training associated with the equipment and materials listed above.

Deliverables:

1. SUBMITTAL FOR APPROVAL: Submittal shall be submitted for approval within 6 weeks after acceptable purchase Agreement is received in the Office of Smart Energy Solutions.
2. DELIVERY: Equipment and Materials shall be delivered to the project site within 12 to 16 weeks after complete and acceptable approval is received in the Office of Smart Energy Solutions.
3. SERVICES: Services as outlined above.

Our scope of work shall be as outlined above. Our fee shall be [REDACTED] lump sum and shall be based on the following:

1. Twenty-five (25%) payable at the time of approval of submittals and/or prior to release of equipment to manufacturing.
2. Balance of material payable upon shipment of equipment and materials to the job site.

3. Remaining percentage to be billed monthly based on percentage of completion.

Upon receipt of a Tax Exemption Certificate, the Sales Tax will be eliminated from said invoice.

Retainage is neither offered nor accepted.

Very truly yours,

Ron Robinette

ACCEPTED _____ DATE _____