

# CITY OF EDGEWATER



## LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS BID #17-ES-003

Prepared by:  
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-Consulting Engineers-  
December 2016

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**BID NO. 17-ES-003**

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**INVITATION TO BID  
CITY OF EDGEWATER, FLORIDA  
LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS  
BID # 17-ES-003**

Notice is hereby given that the City of Edgewater is accepting bids for the construction of the **LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS, BID NO. 17-ES-003**. Bids will be received in the City Clerk's office, Edgewater City Hall, 104 N. Riverside Drive, P.O. Box 100, Edgewater, Florida 32132 until 3:00 p.m. on **February 1, 2017** at which time they will be publicly opened and read aloud.

**DESCRIPTION OF WORK:** This project consists of retrofitting an existing area with stormwater improvements and water main replacement. Construction items include approximately 1250 LF of 6" and 2" water main, 940 LF of various sizes of exfiltration pipe, 700 LF of sodded swales, 120 LF of various sizes of reinforced concrete pipe, 10 drainage structures, and the installation of one baffle box.

A non-mandatory Pre-Bid Conference is scheduled for January 10, 2017 at precisely 10:00 a.m. in the Edgewater Council Chambers, 104 N. Riverside Drive, Edgewater, Florida, 32132. All bidders are strongly encouraged to attend this conference.

Copies of the Project Manual and Drawings are available and may be obtained from [www.cityofedgewater.org](http://www.cityofedgewater.org) or Quentin L. Hampton Associates, Inc., Consulting Engineer, 4401 Eastport Parkway, Port Orange, FL, 32127, at the non-refundable price of one hundred dollars (\$100.00) or a CD for twenty five dollars (\$25.00). Addenda will be issued via email and it is the Bidder's responsibility to confirm that all addenda have been received prior to submitting a bid for this project. Direct all questions to the Purchasing Specialist, Pat Drosten in writing via e-mail [pdrosten@cityofedgewater.org](mailto:pdrosten@cityofedgewater.org). Last date for question is January 16, 2017 at 2:00 p.m.

A certified check or bank draft, payable to the City of Edgewater, Florida, or a satisfactory bid bond executed by the Bidder and an acceptable surety, in an amount equal to five percent (5%) of the bid must accompany each bid submitted. Bids shall remain open and all prices shall remain firm for a period of ninety (90) days after the bid opening. Bids may be withdrawn and prices may be changed or clarified only with the consent of the City and at the City's sole and absolute discretion after bid opening.

The successful bidder will be awarded a contract that will require the bidder to provide (1) a Performance and a Payment Bond, each in the amount equal to 100% of the Contract Amount and complying with the applicable provisions of Section 255.05, Florida Statutes (2003); and (2) insurance as required by Owner in the contract with the City. No bids received after the time and date specified for the opening will be considered. The City reserves the right to reject any and all bids, to waive any and all non-substantial irregularities in bids received whenever such rejection or waiver is in the best interest of the City.

Two (2) total copies, one (1) original and one (1) electronic copy on a USB flash drive, of the proposal should be delivered to the City Clerk’s Office, City of Edgewater, 104 North Riverside Drive, P.O. Box 100, Edgewater, Florida 32132-0100 in a sealed envelope plainly marked on the outside: “**LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS**”, ITB NO 17-ES-003.

The following projected timetable should be used as a working guide for planning purposes only. The City reserves the right to adjust this timetable as required during the course of the RFP process.

Issue RFP Notice	December 15, 2016
Non-Mandatory Pre-Bid Conference	January 10, 2017 @ 10:00 am
Last Date for Receipt of Written Questions	January 16, 2017 @ 2:00 pm
Addendum Issued (If Applicable)	January 23, 2017
Proposal Close Date	February 1, 2017 @ 3:00 pm
Evaluation of Bids	February 9, 2017
City Council Contract Approval Date	March 6, 2017

**CITY OF EDGEWATER  
VOLUSIA COUNTY, FLORIDA**

**Robin L. Matusick**  
City Clerk

SECTION 00100

INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.01 PROJECT DESCRIPTION

- A. The work of this project consists of furnishing all labor, materials, equipment, tools, transportation, services, and incidentals and performing all work necessary to construct

**LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS  
BID NO. 17-ES-003**

1. All above referenced work shall be complete, in place, and ready for service in accordance with the drawings and specifications prepared therefore by Quentin L. Hampton Associates, Inc., and entitled, **“LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS BID NO. 17-ES-003.”**
- B. The location of the project is in Edgewater, Volusia County, Florida.

1.02 DEFINED TERMS

- A. Terms used in the Instructions to Bidders are defined and have the meanings assigned to them in the General Conditions. The term "Bidder" means any corporation, firm, partnership, or individual who submits a bid directly to the City. The term "Successful Bidder" means lowest, qualified, responsible and responsive Bidder to whom City (on the basis of City's evaluation as hereinafter provided) makes an award.

1.03 COPIES OF BIDDING DOCUMENTS

- A. Only complete sets of Bidding Documents will be issued and shall be used in preparing bids. Each bidder shall be responsible for confirming that it has been issued a complete set of Bidding Documents. Neither the OWNER nor the ENGINEER assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets.
- B. Complete sets of Bidding Documents may be obtained in the manner and at the location stated in the Invitation to Bid.

1.04 RECEIPT OF BIDS

- A. The place to which bid must be delivered, the amount of bid Security required and the date, time and place of bid opening, are stated in the Invitation to Bid. The Bid

Form amplifies the Advertisement in indicating the location and description of the project to be constructed and shows the approximate quantities of work to be performed and materials to be furnished, if a unit price contract, any special requirements which may vary from or are not contained in the specifications. The bid documents as listed in Paragraph 1.08, Preparation of Proposal, shall be submitted as described in Section 00100.

#### 1.05 BIDDER'S QUALIFICATIONS

- A. The Bidder will be required to show that he/she is capable of performing the work contemplated and shall furnish, if requested, in duplicate the following:
  - 1. A sworn statement showing the equipment definitely controlled by the Bidder and available to him for performing the work;
  - 2. A sworn statement of his/her experience in performing work of the character for which his bid is submitted; and,
  - 3. A sworn statement showing his/her current assets and liabilities as of a date not more than ninety (90) days prior to the date of submission.
- B. If the Owner approves the above required statements, and the Bid is accompanied by the specified security, person, firm or corporation submitting such Bid shall be considered as a qualified Bidder.

#### 1.06 BIDDER'S RESPONSIBILITY

- A. The Bidder is required to carefully examine the site of the project, the Bid Form, Drawings, Specifications, Agreement Form, and all other forms pertinent to the work contemplated. It will be assumed that he has satisfied himself as to the conditions to be encountered, the character, quality, and quantities of work to be performed and materials to be furnished, and the requirements of the Contract and specifications. No allowance or concession will be made for lack of such information on the part of the Contractor. It is the responsibility of each Bidder before submitting a bid, to (a) examine the Bidding Documents thoroughly, (b) visit the site, if necessary to become familiar with local conditions that may affect costs, progress, performance or furnishing of the equipment, (c) consider federal, state and local laws and regulations that may affect cost, progress, performance or furnishing of the work, (d) study and carefully correlate Bidder's observations with Bidding Documents, and (e) notify the City of all conflicts, errors or discrepancies in the Bidding Documents.
- B. Whenever such information concerning subsurface materials or conditions is given on the drawings, it is understood, in the absence of any qualifying notation, that it was obtained in the usual manner and the location, depths, and character of the material have been recorded in good faith. There is no expressed or implied

agreement that the depths or the character of the material have been correctly indicated and Bidders should take into account the possibility that conditions affecting the cost or quantities of work to be done may differ from those indicated.

- C. The submission of a bid will constitute an incontrovertible representation by Bidder that without exception the bid is premised upon performing and furnishing the work required by the Bidding Documents and such means, methods, techniques, sequences or procedures as may be indicated in or required by the Bidding Documents, and that the Bidding Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

#### 1.07 APPROXIMATE ESTIMATE OF QUANTITIES

- A. The Bidder's attention is directed to the fact that the estimated quantities of work to be done and materials to be furnished under these specifications are approximate. The Owner does not assume any responsibility that the quantities shall obtain strictly in the construction of the Project, nor shall the Contractor plead misunderstanding or deception because of such estimate of quantities, or of the character of the work or location, or other conditions pertaining thereto. The Owner reserves the right to increase or diminish any or all of the above mentioned quantities of work or to omit any of them, as it may deem necessary, and such increase or decrease of the quantities given for any of the items shall not be considered as sufficient grounds for granting an increase in the unit prices bid, except as set forth in the General Conditions.

#### 1.08 PREPARATION OF BID

- A. In submitting Bids in the manner prescribed under Paragraph 1.14, of Section 00100, the submitting Bids Form, the preparation of required documents shall be submitted as described in Section 00300-3 under Supplemental Requirements and must be properly executed in ink.
- B. Total bid prices shall be written in ink, in both words and numerals, in the blank spaces for each item. In the event of any discrepancy between the written amount and the numerals, the written amount shall govern and will be considered as the price bid.
- C. Except as provided below, bids containing substitutions or combinations of alternates will not be considered unless such substitutions or combinations are specifically authorized by the Bid.
- D. In bids involving unit work items, the unit prices and the extensions, are for informational purposes only, and the determination of the lowest bid will be based solely on the total written price in words submitted in Section 00300, Proposal. The Bidder shall submit a completed Schedule of Unit Prices, Section 00310 with each bid. The bid may be considered non-responsive without this form.

- E. The Bidder shall sign his/her name and give his/her business address in the spaces provided therefore. If the Bid is made as a partnership, it shall be signed by all partners; if made by a corporation, it shall be signed in the name of the corporation by one of the officers thereof and shall have affixed the seal of the corporation.
- F. ALL INFORMATION INCLUDED IN BID SHALL BE SUBMITTED IN DUPLICATE, one (1) original and one (1) electronic copy on a USB flash drive.

#### 1.09 BID SECURITY

- A. Each Bid shall be accompanied by a security in the form of a certified check, bank draft or, when specifically permitted, a Bid Bond, payable to the Owner, in the amount indicated in the Invitation to Bid and, in either case, with properly executed Agreement of Surety. Such proposal security of the successful Bidder shall be forfeited to the Owner as liquidated damages if the successful Bidder fails to execute and deliver the Contract in conformity with the Form of Agreement, and furnish bonds and insurance certificates as specified within ten (10) days after notification by the Owner of the acceptance of his bid. Within three (3) days after formal opening of bids, the securities therefore will be returned except those which the Owner elects to hold until the award is made and the successful Bidder qualified and executes the Contract. Thereafter, Bid Securities, other than that of the qualified low Bidder, will be returned at once. The security of the successful Bidder will be returned to him when the Contract is executed by both parties hereto. If all Bids are rejected, the securities therefore will be returned immediately after the determination of such rejection.

#### 1.10 WITHDRAWAL OF BIDS

- A. All Bidders specifically waive any right to withdraw a Bid after it has been submitted to the Owner, except as hereinafter provided. A Bidder may withdraw a Bid provided the Bidder makes a request to do so by telephone, telegraph, or in writing to the Owner, and provide that such requests reach the office of the Owner not later than (24) twenty four hour prior to the bid opening. Requests by telephone or telegraph must be confirmed in writing, by the Bidder in person, or by an accredited representative of the Bidder before the time set for the opening of the Bids. No bids may be withdrawn for a period of NINETY (90) DAYS after the date and time designated for the opening thereof.

#### 1.11 RIGHT TO REJECT BIDS

- A. The unqualified right is reserved by the Owner to waive any informalities in, or reject any or all Bids as may be deemed to the best interest of the Owner. Bids which contain any omissions, erasures, alterations, additions not called for, conditional bids, or irregularities of any kind, or Bids otherwise regular which are not accompanied by

Bid Security, may be rejected as informal. Bids in which the bid prices are obviously unbalanced may be rejected. Bids may be withdrawn and prices may be changed or clarified only with the consent of the City and at the City's sole and absolute discretion after bid opening.

#### 1.12 CHANGES PRIOR TO THE OPENING OF BIDS

- A. During the period allowed for preparation of bids, the Bidders may be furnished addenda or bulletins for additions to or alterations of the Drawings or Specifications, which shall be included in the work, covered by the Bid and become a part of the Contract Documents, he/she may submit to the Engineer a written request for an interpretation thereof. The Bidder submitting the request will be responsible for its prompt delivery. Any interpretation of the Contract Documents will be made only by addendum duly issued and a copy of such addendum will be mailed or delivered to each prospective Bidder of Record. The Owner will not be responsible for any other explanations or interpretations of the proposed Contract Documents.

#### 1.13 SCOPE OF WORK

- A. Unless otherwise provided in the Construction Specifications or the Bid, it is the intent of the Contract Documents to prescribe a complete project which the Bidder proposes to construct, by furnishing all labor, materials, equipment, tools, necessary utilities and other facilities, and performing all work necessary to incidental to such construction, in full compliance with the Drawings, Specifications, Bid, and Contract, and any special requirements contained therein or supplements attached thereto.
- B. Should any construction or condition be anticipated which is not covered by these Specifications, the special requirements thereof will be stated in the Bid, and any such special requirements shall be considered a part of these specifications as though they were fully contained herein. If any special requirements stated in the Bid conflicts with any of the provisions of these Specifications, the former shall govern.

#### 1.14 SUBMITTING BIDS

- A. Bids, accompanied by the Bid Security, and all addenda, if any, and all other required supporting documentation shall be submitted, (1) original and one (1) electronic copy on a USB flash drive of the complete bid before the closing date and time in an opaque, sealed envelope, addressed to the Owner. The name of the Bidder shall appear in the upper left-hand corner of the envelope and the following notation shall appear in the lower left-hand corner.

### **LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS**

#### **BID NO. 17-ES-003**

B. If the bid is sent through the mail or other delivery system the sealed envelope shall be enclosed in a separate envelope with the notation "**BID ENCLOSED**" on the face of it.

1. **Questions:** Please direct all questions to the Purchasing Specialist, Pat Drosten in writing via email at [pdrosten@cityofedgewater.org](mailto:pdrosten@cityofedgewater.org).

#### 1.15 AWARD AND EXECUTION OF CONTRACT

A. When a Bid received has been determined to be satisfactory, a Contract will be awarded to the lowest responsive Bidder within the time designated in the Contract Documents.

B. In addition to total bid price, the Owner shall consider current work load, quality of past performance, financial strength, ability to meet time requirements, qualifications of personnel, integrity, licensing, corporate qualifications, and/or any other criteria deemed pertinent by the Owner when determining the most responsive bidder.

C. The Bidder to whom the award is made shall execute the Contract and return it, together with the properly executed bonds and insurance certificates, to the office of the Owner, within the time specified in Paragraph 1.09 of Section 00100.

D. If the Contractor executes his Contract as herein provided and the Contract is not executed by the Owner within thirty (30) days after the receipt thereof from the Contractor, the Owner upon written request of the Contractor will return the Bid Security. In such event, the award of the Contract shall be considered as annulled.

E. The Contract, Surety Bonds, and insurance certificates shall be executed in triplicate, or in as many copies as the Owner may require.

#### 1.16 CANCELLATION OF AWARD

A. The Owner reserves the right to cancel the award of any contract at any time prior to its execution by the Owner.

#### 1.17 INDEMNITY AND INSURANCE

A. The Contractor shall not commence work under this Contract until he has obtained all insurance required under by these Specifications and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on a subcontract until all similar insurance required of the subcontractor has been so obtained and approved by the Contractor.

- B. Certificates. The Contractor shall submit certificates or other documentary evidences to the Owner for approval, covering Workmen's Compensation Insurance; and Public Liability and Property Damage Insurance as well as any other insurance required by the Contract Documents. Each certificate or other documentary evidence presented shall contain therein or have contained in a rider attached thereto and made a part thereof, a clause to the effect that the insurer will notify the insured and the Owner in writing thirty (30) days prior to the cancellation of the policy. The certificate for each policy shall be executed in quintuplicate, or in as many copies as the Owner may require. The City shall be listed as an additional insured.
- C. Accidents and Claims. The Contractor shall be held responsible for all accidents and shall indemnify and protect the Owner from all suits, claims and actions brought against it, and all cost or liability, including attorneys fees, to which the Owner may be put for any injury or alleged injury to the person or property of another resulting from negligence or carelessness in the performance of the work, or from any improper or inferior workmanship, or from inferior materials used in the work.
- D. Mutual Responsibility of Contractors. Should a Contractor in the performance of his/her Contract cause damage to any person, any property, or work of another Owner or other party to the damage, arrange for an amicable settlement thereon. It is agreed by all parties herein that such disputes shall not delay completion of the work, nor be cause for claim against the Owner. Work shall be continued by the party claiming damages at his/her expense, subject to such damages as may be obtained by due course of law.
- E. Contractor's Liability. The status of the Contractor in the work to be performed by him/her under this Contract is that of an independent Contractor and that, as such, he/she shall properly safeguard against any and all injury or damage to the public, to public and private property, materials and things; and that, as such, he/she alone shall be responsible for any and all damage, loss or injury to persons or property that may arise, or be incurred, in or during the conduct or progress of said work without regard to whether or not the Contractor, his/her subcontractors, agents, or employees have been negligent; and that the Contractor shall keep the Owner free, and discharge of, and from any and all responsibility for risks or casualties of every description, for any or all damage, loss or injury to persons or property arising out of the nature of the work, from the action of the elements, or from any unforeseen or unusual difficulty, the Contractor shall assume and be liable for all blame and loss of whatsoever nature by reason of neglect or violation of any federal, state, county, or local laws, regulations or ordinances; that Contract shall indemnify and save harmless the Owner and all its officers, agents and employees from all suits or actions at law of any kind whatsoever in connection with this work and shall, if required by the Owner, produce evidence of settlement of any such action before final payment shall be made by the Owner.

#### 1.18 CANCELLATION OF CONTRACT

- A. As soon as practicable after the satisfactory execution of the Contract by both parties, written Notice to Proceed with the work will be given to the Contractor. If such notice is not given within thirty (30) days after contract execution, and the delay is not caused by the Contractor or accepted by him/her in writing, the Contract may be declared null and void by either party.
- B. If the Contractor incurs any expense in furtherance of the Contract prior to receipt of the Notice to Proceed, he/she does so, on his own responsibility.

#### 1.19 COMPLETION TIME AND LIQUIDATED DAMAGES

- A. The Bidder shall understand that the time limit indicated for completion of this Contract, and the amount of liquidated damages to be charged against the Contractor shall be declared in default in accordance with the provisions of the Specifications, shall be as stated in Article 2 of the Form of Agreement which is a part of these Contract Documents.

#### 1.20 PAYMENT OF TAXES

- A. The Contractor will be responsible for payment of all Excise, Sales and Use Taxes, and all other taxes required by law on all materials, tools, apparatus, equipment, fixtures, and incidentals which he/she purchases or uses for the purpose of fulfilling the work of this Contract, and he/she shall include all amounts required for such taxes with the item prices bid in his/her Bid. No additional payment will be made to cover such taxes. Each Bidder shall thoroughly familiarize him/her before submitting a Bid, with all laws requiring the payment of taxes.

#### 1.21 PUBLIC ENTITY CRIMES INFORMATION STATEMENT

- A. “A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount, provided in Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list”

#### 1.22 BID PROTEST

- A. Any Bidder who wishes to file a bid protest shall follow the City of Edgewater Purchasing Policies and Procedures current as of the date of the bid.

END OF SECTION

SECTION 00300

PROPOSAL

FOR

**LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS  
BID NO. 17-ES-003**

Bidder's Name: \_\_\_\_\_

Submitted: \_\_\_\_\_, 20\_\_

City of Edgewater  
City Clerk  
P.O. Box 100  
Edgewater, FL 32132-0100

Gentlemen:

The undersigned, as Bidder, hereby declares that the only person or persons interested in the Bid, as principal or principals, is or are named herein and that no other persons than herein mentioned has any interest in the Bid or the Contract to which the work pertains; that this Bid is made without connection or arrangement with any other person, company, or parties making a bid or proposal and that the Bid is in all respects fair and made in good faith without collusion or fraud.

The Bidder further declares that he/she has examined the site of the work and that from personal knowledge and experience, or that he/she has made sufficient test holes and/or other subsurface investigations to fully satisfy him/her self that such site is a correct and suitable one for this work and he/she assumes full responsibility therefore; that he/she is familiar with all legal requirements (Federal, State and local laws, ordinances, rules and regulations) pertaining to the Work; that he/she has examined the Drawings and Specifications for the work and from his/her own experience or from professional advice that the Drawings and Specifications are sufficient for the work to be done and he/she has examined the other Contract Documents and all addenda relating thereto, and that he/she has satisfied him/her self fully, relative to all matters and conditions with respect to the work to which this Bid pertains.

The Bidder proposes and agrees, if this Bid is accepted, to contract with the City of Edgewater, (Owner) in the form of contract specified, to furnish all necessary materials, equipment, machinery, tools, apparatus, transportation, and labor and to perform all work necessary to complete the Work specified in the Bid and other Contract Documents.

The Bidder further proposes and agrees to comply in all respects with the time limits for commencement and completion of the Work as stated in the Contract Form.

The Bidder further agrees that the deductions for liquidated damages, as stated in the Contract Form, constitute fixed and agreed liquidated damages to reimburse the Owner for additional costs to the Owner resulting from the Work not being completed within the time limit stated in the Contract Form.

The Bidder further agrees to execute a Contract and furnish satisfactory Certificates of Insurance, within ten (10) consecutive calendar days after written notice being given by the Owner of the award of the Contract, and the undersigned agrees that in case of failure on his/her part to execute the said Contract, and Insurance Certificates within ten (10) consecutive calendar days after the award of the Contract, the bid guarantee accompanying his/her bid and the money payable thereon shall be paid to the Owner as liquidation of damages sustained by the Owner; otherwise, the bid guarantee shall be returned to the undersigned within fifteen (15) days after the Contract is signed and Insurance Certificates are filed.

The undersigned agrees to accept as full compensation for completion of the project in full compliance with the Contract Documents, the unit prices for the items named in Section 00310, Schedule of Unit Prices, submitted herein with this Bid.

The undersigned offers to furnish all materials, equipment and labor for construction of

**LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS  
BID NO. 17-ES-003**

for the City of Edgewater, Florida, complete in every respect in strict accordance with the Drawings, Specifications and any future changes therein. The Contractor shall perform these obligations for the prices listed in the Schedule of Unit Prices, Section 00310 attached and made a part of this Bid. The estimated bid total:

\_\_\_\_\_ Dollars  
(In Words)

\$ \_\_\_\_\_  
(In Figures)

**1.01 COMPLETION TIME OF CONTRACT**

- A. The Contractor agrees that the work shall be started not later than the date indicated in the Notice to Proceed and that the work shall be substantially completed in **150 (One Hundred Fifty) calendar days** with an additional **30 (Thirty) calendar days** for final completion.

- B. The Contractor further agrees that for each calendar day, with the exception of Sundays and legal holidays that any work that shall remain uncompleted after the completion time stipulated above the sum of **\$600 (Six Hundred Dollars)** shall be deducted from monies due the contractor, not as a penalty, but as liquidated damages. If the Contractor is declared in default in accordance with the provisions of the Specifications, liquidated damages shall be charged as provided herein, and such amounts shall be deducted from the final amount payable to the Contractor. Should the total amount chargeable as liquidated damages exceed the amount due or payable to the Contractor, then such excess shall be paid to the Owner by the Contractor.

## 1.02 SUPPLEMENTAL REQUIREMENTS

- A. The following documents shall be completed and attached to and made a condition of this bid:

1. Schedule of Unit Prices: Section 00310
2. Statement of Bidder's Qualifications: Section 00320
3. Listing of Subcontractors: Section 00330
4. Listing of Previous Experience: Section 00331
5. Bid Bond: Section 00410
6. Suspension & Debarment, Non-Collusion & Lobbying Certification Form Section 00450
7. Public Crimes Entity Statement: Section 00470
8. Anti-Collusion Statement: Section 00480
9. Drug Free/Tie Preference Statement: Section 00485
10. Trench Safety Affidavit: Section 00490
11. Public Act 2016-20 Public Records Requirements Form Section 00495
12. Contract Agreement Section 00500
13. Certificate as to Corporate Principal: Section 00620

## 1.03 REQUIRED DISCLOSURE

- A. At its sole discretion, the City of Edgewater, Florida may reject any bidder the City finds to lack, or whose present or former executive employees, officers, directors, stockholders, partners or owners are found by the City to lack honesty, integrity, or moral responsibility. The discretion of the City may be exercised based on the City's own investigation, public records, or any other reliable sources of information. By submitting a bid, bidder recognizes and accepts that the City may reject the bid based upon the exercise of its sole discretion and bidder waives any claim it might have for damages or other relief resulting from the rejection of its bid based on these grounds.

## 1.04 SCHEDULE OF MAJOR MANUFACTURERS AND SUPPLIERS

- A. The equipment manufacturers/suppliers on this project shall be as delineated in the following schedule. Bidders should note that the Owner and Engineer have made rigorous investigations of equipment performance and features, and as a result,

Bidders are to note that the contract price for this project shall be based on Base Bid equipment. The Base Bid equipment for this project falls under one of two categories. The first category is equipment that the Owner and Engineer have determined will be supplied by a sole source of supply, for which no substitutions or alternates will be entertained or allowed. Bidder is advised that offering of any alternatives to the sole source supplied equipment will be grounds for rejection of his bid as not responsive. The second category of equipment includes those items where the Owner and Engineer deem there to be more than one acceptable supplier of the particular item listed. The equipment which falls under these two categories is shown on the subsequent pages of this Schedule of Major Manufacturers and Suppliers. Bidder is advised that the award of this Contract will be based solely on the use of Base Bid equipment.

- B. The following comments relate only to the second category of equipment, where the Contract Documents are based upon the equipment or products available from the suppliers denoted as A, B, C, etc. below. These equipment manufacturers, along with the sole source suppliers constitute the Base Bid.
- C. Provision is made in the Contract Documents for alternate manufacturers and suppliers whose equipment or product may be deemed equivalent in quality (see General Conditions). However, the Bidder must indicate in his Bid which Base Bid supplier he intends to use for each item of equipment listed by circling one of the listed manufacturers/suppliers. If the Bidder fails to indicate which listed manufacturer/supplier he intends to use if an alternate is rejected, he must use the supplier listed as "A". Also, if the Bidder circles more than one listed supplier, he must use the first supplier circled (unless an alternate is approved).
- D. If the Bidder desires to propose one or more alternate manufacturers/suppliers, he may write in the name of such alternates in the spaces provided on the Alternate Manufactures/Suppliers page following the schedule. He must, nevertheless, also circle one of the listed manufacturers/suppliers because Bidders' Bid price must be based upon this Base Bid list. Wherever an alternate supplier is proposed, the Bidder must insert the amount to be deducted from the Contract Price (either lump sum or unit price) if the alternate supplier is eventually approved. If the proposed alternate supplier is determined "not equivalent" by the Engineer, the Bidder must use the circled supplier.
- E. For any alternate supplier accepted by the Owner, the Contract Price will be reduced by the deductive amount stated in the Bid. However, the Contract Price will not be adjusted for any alternate supplier rejected.
- F. Each proposed alternate will be evaluated in accordance with the General Conditions. The deductive amount specified for alternate manufacturers/suppliers will not be used in determining the successful Bidder. Alternates will be considered only after award of the contract.

- G. The Contractor shall reimburse the Owner for any costs directly attributable to the change in suppliers, such as additional field trips for the Engineer, additional redesign costs, additional review and inspection costs, etc.
- H. The Owner may request and the Bidder shall supply complete information on proposed alternates prior to the Notice of Award.

SCHEDULE OF MAJOR MANUFACTURERS AND SUPPLIERS

Category I - Sole Source Equipment Items: None

Category II - Major Equipment Items:

EQUIPMENT/MATERIAL

MANUFACTURER OR SUPPLIER

Nutrient Separating Baffle Box  
(as shown on plans)

Suntree Technologies, Inc.

**ALTERNATE MANUFACTURERS/SUPPLIERS**

EQUIPMENT ITEM <u>MATERIAL</u>	SPEC. <u>SECTION</u>	ALTERNATE MANUFACTURER/ SUPPLIER <u>(LIST ONE ONLY)</u>	DEDUCTIBLE AMOUNT (indicate whether lump sum or unit price) <u>ALTERNATE</u>
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10 _____	_____	_____	_____

\_\_\_\_\_  
Name (signature)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name (typed and printed)

\_\_\_\_\_  
Title

**ACKNOWLEDGMENT OF ADDENDA**

**Addenda will be issued via email and it is the Bidder's sole responsibility to confirm that all addenda have been received prior to submitting a bid for this project.** Acknowledgment is hereby made of the following Addenda received since issuance of Drawings and Specifications:

Addendum No. \_\_\_\_\_ Dated: \_\_\_\_\_      Addendum No. \_\_\_\_\_ Dated: \_\_\_\_\_  
Addendum No. \_\_\_\_\_ Dated: \_\_\_\_\_      Addendum No. \_\_\_\_\_ Dated: \_\_\_\_\_  
Addendum No. \_\_\_\_\_ Dated: \_\_\_\_\_      Addendum No. \_\_\_\_\_ Dated: \_\_\_\_\_

Attached hereto is a cashier's check on the \_\_\_\_\_

Bank of \_\_\_\_\_

or Bid Bond for the sum of \_\_\_\_\_ Dollars

(\_\_\_\_\_), made payable to \_\_\_\_\_ (Owner).

\_\_\_\_\_  
(Name of Bidder) (Affix Seal)

\_\_\_\_\_  
(Signature of Officer)

\_\_\_\_\_  
(Title of Officer)

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Address

\_\_\_\_\_  
City/State/Zip

\_\_\_\_\_  
Telephone

\_\_\_\_\_  
Contractor's Florida License Number

The full names and residences of persons and firms interested in the foregoing bid, as principals, are as follows:

\_\_\_\_\_  
\_\_\_\_\_

END OF SECTION

**00310**  
**SCHEDULE OF UNIT PRICES**  
**CITY OF EDGEWATER**  
**LAMONT AND HUBBELL STREET**  
**STORMWATER IMPROVEMENTS**

ITEM	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL
<b>A</b>	<b><i>SITE PREPARATION</i></b>				
1	Preconstruction Video	1	LS		
2	Erosion Control and Pollution Abatement	1	LS		
3	Clearing and Grubbing	1	LS		
4	Indemnification	1	LS	\$1,000.00	\$1,000.00
5	Survey Layout	1	LS		
6	Maintenance of Traffic	1	LS		
7	Grading	1	LS		
8	Hand Locate and Expose Existing Utilities	1	LS		
	<b><i>Subtotal Part A</i></b>				
<b>B</b>	<b><i>POTABLE WATER</i></b>				
1	Water Main				
	a) 6" AWWA C900 DR18 (960 LF Shown)	1000	LF		
	b) 6" D.I.P (0 LF Shown)	20	LF		
	c) 2" DR21 IPS PVC (430 LF Shown)	440	LF		
	d) 2" Poly (10 LF Shown)	20	LF		
2	Gate Valves				
	a) 6" Gate Valve (4 Shown)	5	EA		
	b) 2" Gate Valve	2	EA		
3	Water Main Tie-In				
	a) 8" x 6" Tapping Sleeve and Valve	1	LS		
	b) 2" Line Stop	1	LS		
4	Water Services				
	a) Long	8	EA		
	b) Short	8	EA		
5	DIP Fittings Add or Delete	500	LBS		
6	Cap and Abandon Existing WM	1	LS		
7	Fire Hydrant Assembly (1 shown)	2	EA		
8	Reconnect Existing Fire Hydrant Assembly (2 shown)	2	EA		
	<b><i>Subtotal Part B</i></b>				
<b>C</b>	<b><i>DRAINAGE</i></b>				
1	Storm Structures				
	a) FDOT Type "C" Inlet	1	EA		
	b) FDOT Type "E" Inlet	7	EA		
	c) Junction Manhole	1	EA		

**00310**  
**SCHEDULE OF UNIT PRICES**  
**CITY OF EDGEWATER**  
**LAMONT AND HUBBELL STREET**  
**STORMWATER IMPROVEMENTS**

ITEM	DESCRIPTION	EST QTY	UNIT	UNIT COST	TOTAL
	d) 5'x3' Type J Manhole	1	EA		
	e) 2nd Generation Baffle Box	1	LS		
2	Storm Pipe				
	a) 18" Exfiltration Trench (365 LF Shown)	380	LF		
	b) 15" Exfiltration Trench (550 LF Shown)	570	LF		
	c) 12"x18" RCP (100 LF Shown)	120	LF		
	d) 36" RCP (4 LF Shown)	20	LF		
3	Sodded Swales	700	LF		
	<i>Subtotal Part C</i>				
<b>D</b>	<b>RESTORATION AND MISCELLANEOUS</b>				
1	Asphalt Road Open Cut & Repair Including Striping	200	SY		
2	1" Asphalt Overlay	3,800	SY		
3	Concrete Driveway (6" Thick)	300	SY		
4	Sodding	1,600	SY		
5	Sewer Lateral Replacement/Adjustment	10	EA		
6	As-Built Survey	1	LS		
7	Compliance with Florida "Trench Safety Act"	1	LS		
8	Unsuitable Material Excavation and Replacement	200	CY		
	<i>Subtotal Part D</i>				
	<b>TOTAL BASE BID</b>				

Submitted by: \_\_\_\_\_  
Contractor: \_\_\_\_\_  
Address: \_\_\_\_\_  
Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_  
State of Florida Certified General Contractor (Required Information)  
Licensee: \_\_\_\_\_ License No.: \_\_\_\_\_

SECTION 00320

STATEMENT OF BIDDER'S QUALIFICATIONS

- A. All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The bidder may submit any additional information he/she desires.
1. Name of bidder.
  2. Permanent main office address.
  3. When organized.
  4. If a corporation, where incorporated.
  5. How many years have you been engaged in the contracting business under your present firm or trade name?
  6. Contracts on hand: (Schedule these, showing amount of each contract and the appropriate anticipated dates of completion.)
  7. General character of work performed by your company.
  8. Have you ever failed to complete any work awarded to you? If so, where and why?
  9. Have you ever defaulted on a contract? If so, where and why?
  10. List the more important projects recently completed by your company, stating the approximate cost for each and the month and year completed.
  11. List your major equipment  
\_\_\_\_\_.
  12. Experience in construction work similar in type to this project.
  13. Background and experience of the principal members of your organization, including the officers.
  14. Credit \_\_\_\_\_ available:  
\$ \_\_\_\_\_

15. Give bank reference:  
\_\_\_\_\_
16. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the City of Edgewater?
17. The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the City of Edgewater in verification of the recitals comprising this Statement of Bidder's Qualifications.

Dated at \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.  
(County)

\_\_\_\_\_  
(Name of Organization) By: \_\_\_\_\_  
(Title)

State of \_\_\_\_\_ County of \_\_\_\_\_

\_\_\_\_\_ being duly sworn deposes and says that he is  
(Name)

the \_\_\_\_\_ of \_\_\_\_\_  
(Title) (Name of Organization)

and that the answers to the foregoing questions and all statements therein contained are true and correct.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
(Notary Public)

\_\_\_\_\_  
(My commission expires)

\_\_\_\_\_  
(Commission Number)

END OF SECTION

SECTION 00330

LISTING OF SUBCONTRACTORS

The Bidder proposes that the following subcontractors are qualified to perform the referenced work and have successfully done so on recent projects similar in nature and size. Upon approval of subcontractors listed the successful bidder shall not substitute subcontractors without approval from the Engineer. Bidder shall attach additional sheets as necessary.

SUBCONTRACTOR	COMPANY NAME	REFERENCES
		<b>Name:</b> _____ <b>Phone #:</b> _____ <b>Name:</b> _____ <b>Phone #:</b> _____ <b>Name:</b> _____ <b>Phone #:</b> _____
		<b>Name:</b> _____ <b>Phone #:</b> _____ <b>Name:</b> _____ <b>Phone #:</b> _____ <b>Name:</b> _____ <b>Phone #:</b> _____
		<b>Name:</b> _____ <b>Phone #:</b> _____ <b>Name:</b> _____ <b>Phone #:</b> _____ <b>Name:</b> _____ <b>Phone #:</b> _____
		<b>Name:</b> _____ <b>Phone #:</b> _____ <b>Name:</b> _____ <b>Phone #:</b> _____ <b>Name:</b> _____ <b>Phone #:</b> _____

SECTION 00331

LISTING OF PREVIOUS EXPERIENCE

The bidder proposes that he/she is qualified to perform the referenced work and has successfully done so on recent projects similar in nature and size. A minimum of three (3) projects must be listed below. The Owner reserves the right to check references and confirm information provided herein.

NO.	PROJECT/ OWNER/ REFERENCE	DESCRIPTION/COST	DATE WORK STARTED & FINISHED MM/YR TO MM/YR
<b>1</b>	Project:	Description:	Start Date:
	Owner:		
	Reference Name:	Cost:	Finish Date:
	Reference Phone Number:		
<b>2</b>	Project:	Description:	Start Date:
	Owner:		
	Reference Name:	Cost:	Finish Date:
	Reference Phone Number:		
<b>3</b>	Project:	Description:	Start Date:
	Owner:		
	Reference Name:	Cost:	Finish Date:
	Reference Phone Number:		

END OF SECTION

SECTION 00410

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, \_\_\_\_\_ as Principal and \_\_\_\_\_ of the City of \_\_\_\_\_ State of \_\_\_\_\_, a corporation existing under the laws of the State of Florida, as Surety, are held and firmly bound unto the \_\_\_\_\_ hereinafter called the Owner, in the sum of \_\_\_\_\_ Dollars (\$\_\_\_\_\_) lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

The condition of this obligation is such that whereas the Principal has submitted the accompanying Proposal or Bid, for the construction of:

**LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS  
BID NO. 17-ES-003**

NOW, THEREFORE, if the Principal shall not withdraw said Bid within ninety (90) days after the opening of the same and in the event of the acceptance of his/her bid by the Owner, shall, within the period specified therefore, enter into a written contract with the Owner in accordance with the Bid as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such contract, or in the event of the withdrawal of said Bid within the period specified, of the failure to enter into such contract and give bonds within the time specified, if the Principal shall pay the Owner the difference between the amount specified in said Bid and the amount for which the Owner may procure the required work, if the latter amount be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, the name and corporate seal of each corporate body being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

IN PRESENCE OF: \_\_\_\_\_ (Seal)

\_\_\_\_\_ (Seal)

\_\_\_\_\_ (Seal)  
Individual or Partner

Witness \_\_\_\_\_

ATTEST: \_\_\_\_\_

\_\_\_\_\_ President

\_\_\_\_\_ AFFIX CORPORATE SEAL

\_\_\_\_\_ Address

By \_\_\_\_\_  
AFFIX CORPORATE SEAL

ATTEST: \_\_\_\_\_  
Corporate Surety

\_\_\_\_\_ Title

END OF SECTION

SECTION 00450

**Certification Regarding  
Debarment, Suspension, Ineligibility  
And Voluntary Exclusion**

**Contractor Covered Transactions**

- (1) The prospective contractor of the Recipient, City of Edgewater, certifies, by submission of this document, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- (2) Where the Recipient's contractor is unable to certify to the above statement, the prospective contractor shall attach an explanation to this form.

CONTRACTOR:

\_\_\_\_\_

By: \_\_\_\_\_  
Signature

City of Edgewater  
Recipient's Name

\_\_\_\_\_  
Name and Title

\_\_\_\_\_  
Contract Number

\_\_\_\_\_  
Street Address

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
Date

END OF SECTION

SECTION 00470

SWORN STATEMENT UNDER SECTION 287.133(3)(a), FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES:

**This sworn statement is submitted with Bid, Proposal or Contract No. 17-ES-003 for LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS**

This sworn statement is submitted by \_\_\_\_\_ whose business address is \_\_\_\_\_ and (if applicable) its Federal Employer Identification Number (FEIN) is \_\_\_\_\_ (If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement: \_\_\_\_\_.)

1. My name is \_\_\_\_\_ and my relationship to the entity named above is \_\_\_\_\_.
2. I understand that a "public entity crime" as defined in Paragraph 287.133(g), Florida Statutes, means 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 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 an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.
3. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(i)(b), Florida Statutes, means 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 guilty or nolo contendere.
4. I understand that an "affiliate" as defined in Paragraph **287.133(l)(a)**, Florida Statutes, means:
  - a. A predecessor or successor of a person convicted of a public entity crime: or
  - b. 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. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie that one person controls another person. A person who knowingly enters into a joint venture with a person

who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

5. I understand that a "person" as defined in Paragraph 287.133(i)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

6. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Please indicate which statement applies).

\_\_\_\_\_ Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners, shareholders, employees, members or agents who are active in management of the entity, nor any affiliate of the entity have been charged with and convicted of a public entity crime subsequent to July 1, 1989.

\_\_\_\_\_ The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989, AND (Please indicate which additional statement applies.)

\_\_\_\_\_ There has been a proceeding concerning the conviction before a hearing officer of the State of Florida, Division of Administrative Hearings. The final order entered by the hearing officer did not place the person or affiliate on the convicted vendor list. (Please attach a copy of the final order.)

\_\_\_\_\_ The person or affiliate was placed on the convicted vendor list. There has been a subsequent proceeding before a hearing officer of the State of Florida, Division of Administrative Hearings. The final order entered by the hearing officer determined that it was in the public interest to remove the person or affiliate from the convicted vendor list. (Please attach a copy of the final order).

(Signature) \_\_\_\_\_ Date: \_\_\_\_\_

State of \_\_\_\_\_ County of \_\_\_\_\_

PERSONALLY APPEARED BEFORE ME, the undersigned authority, \_\_\_\_\_

who, after first being sworn by me, affixed his/her signature in the space provided above on this  
\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Notary Public

My Commission Expires:

END OF SECTION

SECTION 00480

ANTI-COLLUSION STATEMENT

By signing this form, the bidder agrees that this is made without any other understanding, agreement, or connection with any person, corporation, or firm submitting a proposal for the same purpose and that the bid is in all respects fair and without collusion or fraud.

SIGN in ink in the space provided below. Unsigned bids will be considered incomplete, and will be disqualified, and rejected.

IT IS AGREED BY THE UNDERSIGNED BIDDER THAT THE SIGNING AND DELIVERY OF THE BID REPRESENTS THE BIDDER'S ACCEPTANCE OF THE TERMS AND CONDITIONS OF THE FORGOING SPECIFICATIONS, CONTRACT AND PROVISIONS, AND IF AWARDED, THIS CONTRACT WILL REPRESENT THE AGREEMENT BETWEEN EACH OF THE GOVERNMENTAL PARTIES.

NAME OF FIRM: \_\_\_\_\_

SIGNED BY: \_\_\_\_\_  
(MUST BE SIGNED BY A COMPANY OFFICER OR AUTHORIZED AGENT)

TITLE: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY AND STATE: \_\_\_\_\_

TELEPHONE: \_\_\_\_\_

COMPLETION TIME: \_\_\_\_\_

NO proposals will be withdrawn for a period of ninety (90) days page 00100-4 subsequent to the opening of the proposals, without the consent of the City of Edgewater.

Acknowledgment of receipt of Addendum number:

1      2      3      4      5      6      7      8      9      10

NO BID (REASON

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

END OF SECTION

## SECTION 00485

### DRUG FREE/TIE PREFERENCE STATEMENT

- A. In the event of a tie bid a preference is given to vendors submitting a certification with their bid/proposal certifying they have a drug-free workplace in accordance with Section 287.087, Florida Statutes. This requirement affects all public entities of the State and becomes effective January 1, 1991. The special conditions are as follow:
1. Identical Tie Bids - Preference shall be given to businesses with drug-free workplace programs. Whenever two or more bids which are equal with respect to price, quality, and service are received by the State or by any political subdivision for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none of the tied vendors have a drug-free workplace program. In order to have a drug-free workplace program, a business shall:
    - a. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
    - b. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
    - c. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).
    - d. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction or, or plea of guilty or nolo contendere to, any violation of chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

- e. Impose a sanction on, or require the satisfaction participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.
- f. 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 complies fully with the above requirements.

\_\_\_\_\_  
VENDOR SIGNATURE

\_\_\_\_\_  
DATE

END OF SECTION

SECTION 00490

TRENCH SAFETY AFFIDAVIT

Trench excavations on this Project are expected to be in excess of 5 feet deep. The Occupational Safety and Health Administration excavation safety standards, 29 CFR 1926.650 Subpart P trench safety standards will be in effect during the period of construction of the Project.

Bidder acknowledges that included in the Bid Price are costs for complying with the Florida Trench Safety Act (90-096, Laws of FL) effective October 1, 1990, and hereby gives assurance that, if awarded the Contract, the Contractor or Subcontractor performing trench excavation work on the Project will comply with the applicable trench safety standards. The Bidder further identifies the costs as follows:

<u>Trench Safety Item (Description)</u>	<u>Cost</u>
_____	_____
_____	_____
_____	_____
_____	_____

\_\_\_\_\_  
\_\_\_\_\_  
(Cost in Words)

TOTAL\$ \_\_\_\_\_

FAILURE TO COMPLETE THE ABOVE SHALL RESULT IN THE BID BEING DECLARED NON-RESPONSIVE

COMPANY NAME: \_\_\_\_\_

DATE: \_\_\_\_\_ BY: \_\_\_\_\_

(Additional sheets shall be attached, as needed, and items shall be organized to correspond with the bid format)

END OF SECTION



## **PUBLIC ACT 2016-20 PUBLIC RECORDS REQUIREMENTS**

### **RECORDS / AUDITS**

The City of Edgewater is a public agency subject to Chapter 119, Florida Statutes. The Contractor shall comply with Florida's Public Records Law. Specifically, the Contractor shall:

- a. Keep and maintain public records required by the City in order to perform the service;
- b. Upon request from the City's custodian of public records, provide the public agency with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in this chapter or as otherwise provided by law.
- c. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the contractor does not transfer the records to the City.

Upon completion of the contract, transfer, at no cost to the City, all public records in possession of the Contractor, or keep and maintain public records required by the City to perform the service. If the Contractor transfers all public records to the City upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the City, upon request from the City's custodian of public records in a format that is compatible with the information technology systems of the City.

During the term of the contract, the Contractor shall maintain all books, reports and records in accordance with generally accepted accounting practices and standards for records directly related to this contract. The form of all records and reports shall be subject to the approval of the City Clerk. The Contractor agrees to make available to the City Clerk, during normal business hours and in Volusia County, all books of account, reports and records relating to this contract.

### **PUBLIC RECORDS CUSTODIAN**

**IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT:**

**CITY CLERK'S OFFICE  
CITY OF EDGEWATER  
104 N. RIVERSIDE DRIVE  
EDGEWATER, FL 32132  
(386)424-2400 X 1102  
[CITYCLERK@CITYOFEDGEWATER.ORG](mailto:CITYCLERK@CITYOFEDGEWATER.ORG)**

Signature acknowledges receipt and understanding of this form.

\_\_\_\_\_  
Name/Title

\_\_\_\_\_  
Date

SECTION 00500

AGREEMENT  
FOR  
LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS  
BID NO. 17-ES-003

**THIS AGREEMENT**, made this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_, by and between the **CITY OF EDGEWATER**, a municipal corporation (hereinafter referred to as “City”), whose mailing address is P. O. Box 100, Edgewater, Florida 32132-0100 and \_\_\_\_\_ (hereinafter referred to as “Contractor”), whose mailing address is \_\_\_\_\_.

ARTICLE 1 THE WORK OF THIS CONTRACT

- 1.01 The Contractor shall fully execute the Work described in the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others.
- 1.02 Contractor agrees to furnish all labor, superintendence, materials, plant and other utilities for, perform all work necessary for or incidental to, and to perform all other obligations imposed by this Contract for the Construction of:

**LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS  
BID NO. 17-ES-003**

- 1.03 Herein called for, in strict accordance with the Drawings and Specifications prepared by Quentin L. Hampton Associates, Inc., Engineers, which Contract includes, but is not limited to, the following Contract Documents:
- A. Invitation
  - B. Instructions
  - C. Proposal
  - D. This Agreement
  - E. Performance Bond
  - F. Certificate of Insurance
  - G. Specifications
  - H. Addenda (if any)
  - I. Drawings

ARTICLE 2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

- 2.01 The date of commencement of the Work shall be fixed in a notice to proceed issued by the City.

- 2.02 The Contract Time shall be measured from the date of commencement.
- 2.03 The Contractor shall achieve Substantial Completion of the Work not later than **150 calendar days** from the date of commencement with an additional **30 days** for final completion, or as follows:
- 
- 

2.04 Subject to adjustments of this Contract Time or as provided in the Contract Documents.

### ARTICLE 3 CONTRACT SUM

3.01 The City shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be \_\_\_\_\_ dollars (\$ \_\_\_\_\_), subject to additions and deletions as provided in the Contract Documents.

3.02 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the City:

3.03 Unit prices, if any, are as follows:

- A. Unit prices identified in the Contractor's Bid/Proposal may be used by the City in its sole discretion to calculate the pricing of change order work or extra work.

### ARTICLE 4 PAYMENTS

#### 4.01 PROGRESS PAYMENTS

- A. Based upon Applications for Payment submitted to the Engineer by the Contractor and Certificates for Payment issued by the Engineer, the City shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents. The period covered by each Application for Payment shall be one calendar month ending on the last day of the month.
- B. The City shall establish a schedule of values that will serve as a basis for progress payments. The schedule of values shall be submitted with each application for payment.

- C. Provided that an Application for Payment is received by the Engineer not later than the 25<sup>th</sup> day of a month, the City shall make payments to the Contractor not later than the 15<sup>th</sup> day of the following month, provided that the Application has been approved by the Engineer and the City. If an Application for Payment is received by the Engineer after the date fixed above, payment shall be made by the City not later than 25 days after the Engineer receives the Application for Payment, provided that the Application has been approved by the Engineer and the City. The City shall make such progress payments to the Contractor on the basis of a duly certified and approved estimate by the Engineer of the work performed in an amount equal to ninety percent (90%) of the duly certified and approved estimate. To insure proper performance of this Contract, the City shall retain ten percent (10%) of the amount of each estimate until the work is fifty percent (50%) complete. When the Work is fifty percent (50%) complete, the City, in its absolute discretion, may reduce retainage to five percent (5%) of the amount of each payment duly certified and approved thereafter.

#### 4.02 FINAL PAYMENT

- A. Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the City to the Contractor when:
1. the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Paragraph 17.2, and to satisfy other requirements, if any, which extend beyond final payment; and
  2. a final Certificate for Payment has been issued by the Engineer.
- B. The City's final payment to the Contractor shall be made as follows:
1. Upon completion of the entire work under the Contract, the Engineer shall make a final inspection and certify the completion to the City. Upon approval of the completion certificate by the City, the City shall notify the Contractor and the Surety of the satisfactory completion of the Work and, except as provided for in the Specifications, shall make final payment to the Contractor not later than thirty (30) days after written acceptance by the Contractor of the completion certification and the computation of the final amount due.

#### ARTICLE 5 NUMERATIONS OF THE CONTRACT DOCUMENTS

- 5.01 The Contract Documents are listed in Article 6 and, except for Modifications issued after execution of this Agreement, are enumerated as follows:
- A. The Agreement is this executed 1997 edition of the Abbreviated Standard Form of Agreement between City and Contractor, AIA Document A107-1997, as modified for this project.

- B. The Specifications for the Contract are those contained herein for Bid No. 17-ES-003, Prepared by Quentin Hampton and Associates, Inc., dated December 2016.
- C. The Drawings are attached and are dated August 2016 unless a different date is shown below.
- D. The Addenda, if any, are as follows:

Number	Date	Pages
_____	_____	_____

- E. Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 5.
- F. Other documents, if any, forming part of the Contract Documents is as follows:

GENERAL CONDITIONS

ARTICLE 6 THE CONTRACT DOCUMENTS

6.01 THE CONTRACT DOCUMENTS

- A. The Contract Documents consist of this Agreement with Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to the execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Engineer. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

6.02 THE CONTRACT

- A. The Contract Documents from the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Document shall not be construed to create a contractual relationship of any kind (1) between the Engineer and Contractor, (2) between the City and a Subcontractor or sub-subcontractor, (3) between the City and Engineer or (4) between any persons or entities other than the City and Contractor.

### 6.03 THE WORK

- A. The term “Work” means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor’s obligations. The work may constitute the whole or a part of the Project.

### 6.04 EXECUTION OF THE CONTRACT

- A. Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

### 6.05 OWNERSHIP AND USE OF ENGINEER’S DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

- A. The Drawings, Specifications and other documents, including those in electronic form, prepared by the Engineer and the Engineer’s consultants are Instruments of Service through which the Work to be executed by the Contractor is described. The Contractor may retain one record set. Neither the Contractor nor any Subcontractor, sub-subcontractor or material or equipment supplier shall own or claim a copy right to the Drawings, Specifications and other documents prepared by the Engineer or the Engineer’s consultants, and unless otherwise indicated the Engineer and the Engineer’s consultants shall be deemed the authors of them and will retain all common law, statutory and other reserved rights, in addition to the copyrights. All copies of them, except the Contractor’s record set, shall be returned or suitably accounted for to the Engineer, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Engineer and the Engineer’s consultants, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the City, Engineer and the Engineer’s consultants. The Contractor, Subcontractors, sub-subcontractors and material or equipment suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Engineer and the Engineer’s consultants appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Engineer and the Engineer’s consultants. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Engineer’s or Engineer’s consultants’ copyrights or other reserved rights.

## ARTICLE 7 OWNER

### 7.01 CITY'S RIGHT TO STOP THE WORK

- A. If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents, or persistently fails to carry out the Work in accordance with the Contract Documents, the City may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order is eliminated; however, the right of the City to stop the work shall not give rise to a duty on the part of the City to exercise this right for the benefit of the Contractor or any other person or entity.

### 7.02 CITY'S RIGHT TO CARRY OUT THE WORK

- A. If the Contractor defaults or persistently fails or neglects to carry out the Work in accordance with the Contract Documents, or fails to perform a provision of the Contract, the City, after ten (10) days' written notice to the Contractor and without prejudice to any other remedy the City may have, may make good such deficiencies and may deduct the reasonable cost thereof, including City's expenses and compensation for the Engineer's services made necessary thereby, from the payment then or thereafter due the Contractor.

## ARTICLE 8 CONTRACTOR

### 8.01 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

- A. Since the Contract Documents are complementary, before starting each portion of the work, the Contractor shall carefully study and compare the various Drawings and other Contract Documents relative to that portion of the Work, as well as any information furnished by the City, shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating construction by the Contractor and are not for the purpose of discovering errors, omissions or inconsistencies in the Contract Documents; however, any errors, omissions or inconsistencies discovered by the Contractor shall be reported promptly to the Engineer as a request for information in such form as the Engineer may require.
- B. Any design errors or omissions noted by the Contractor during this review shall be reported promptly to the Engineer, but it is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional unless otherwise specifically provided in the Contract Documents.

## 8.02 SUPERVISION AND CONSTRUCTION PROCEDURES

- A. The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over the construction means, methods, techniques, sequences and procedures, and for coordinating all portions of the Work under the Contract, unless the Contract Documents give specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall be fully and solely responsible for the jobsite safety thereof unless the contractor gives timely written notice to the City and Engineer that such means, methods, techniques, sequences or procedures may not be safe.
- B. The Contractor shall be responsible to the City for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the work for or on behalf of the Contractor, or any of its Subcontractors.

## 8.03 LABOR AND MATERIALS

- A. Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.
- B. The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.
- C. The Contractor shall deliver, handle, store and install materials in accordance with manufacturers' instructions.
- D. The Contractor may make substitutions only with the consent of the City, after evaluation by the Engineer and in accordance with a Change Order.

## 8.04 WARRANTY

- A. The Contractor warrants to the City and Engineer that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation or normal wear and tear

and normal usage. Contractor warrants that all workmanship and materials shall be free of defects for a period of one (1) year from the date of Final Payment Contractor shall repair or replace at its own expense, as directed by City, any defects in workmanship or materials which appear within one (1) year from the date of Final Payment, provided however, that any defect that is hidden or latent shall be repaired or replaced within one (1) year of the date when City discovers such defect. Contractor further warrants that all repair or replacement work performed to repair or replace defective work or materials shall also be warranted to be free of defects for a period of one (1) year from the date such repair or replacement is accepted by the City. Contractor shall commence and diligently pursue the correction of any defect not later than fifteen (15) days of receiving City's written notice of such defect. If Contractor does not commence or diligently pursue to repair or replace such defects in workmanship or materials within the fifteen (15) day period, then City may repair or replace such defects and Contractor shall reimburse City for the costs thereof, including all interest, attorneys' fees and costs of collection. Contractor shall assign and/or transfer to the City all manufacturers' direct warranties for components, materials, electrical panels or appliances as a condition precedent to receiving Final Payment. All such manufacturer's warranties shall be for a period of not less than one (1) year.

#### 8.05 TAXES

- A. The Contractor shall pay sales, consumer, use and other similar taxes which are legally enacted when bids are received or negotiations concluded.

#### 8.06 PERMITS, FEES AND NOTICES

- A. Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work.
- B. The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities applicable to performance of the Work. The Contractor shall promptly notify the Engineer and City if the Drawings and Specifications are observed by the Contractor to be at variance therewith. If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Engineer and City, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

#### 8.07 SUBMITTALS

- A. The Contractor shall review for compliance with the Contract Documents, approve in writing and submit to the Engineer Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness. The Work shall be in accordance with approved submittals.

- B. Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents.

#### 8.08 USE OF SITE

- A. The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

#### 8.09 CUTTING AND PATCHING

- A. The Contractor shall be responsible for cutting, fitting or patching required to complete the work or to make its parts fit together properly.

#### 8.10 CLEANING UP

- A. The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus material.

#### 8.11 ROYALTIES, PATENTS AND COPYRIGHTS

- A. The Contractor shall pay all royalties and license fees, shall defend suits or claims for infringement of copyrights and patent rights and shall hold the City and Engineer harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the City or Engineer, unless the Contractor has reason to believe that there is an infringement of patent or copyright and fails to promptly furnish such information to the Engineer.

#### 8.12 ACCESS TO WORK

- A. The Contractor shall provide the City and Engineer access to the Work in preparation and progress wherever located.

#### 8.13 INDEMNIFICATION

- A. To the fullest extent provided by law, the Contractor shall indemnify, defend, and hold harmless the City, and all of its officers, agents, and employees from all claims, loss, damage, cost, charges or expense including, but not limited to reasonable attorneys' fees, caused in whole or in part by any act, omission or default of the Contractor, its agents, employees, or subcontractors arising out of the performance or failure to perform the work on this project. Contractor's obligation to indemnify,

defend and hold harmless the City shall include such occurrences where such claim, loss, damage, costs, charges, expense or attorneys' fees may be caused, in whole or in part, by the City. However, such indemnification shall not include claims of, or damages resulting from, gross negligence, or willful, wanton or intentional misconduct of the City, or its agents or employees, nor shall the indemnification cover statutory violations or punitive damages, except and to the extent the statutory violation or punitive damages are caused by or result from the acts or omissions of the Contractor, its agents or employees. The extent of the indemnification granted herein for liability for damages to persons or property caused in whole or in part by any act, omission, or default of the City shall not exceed \$1,000,000 per occurrence, unless the indemnification is subject to insurance coverage that exceeds such amount. City and Contractor agree that \$1,000,000 per occurrence, or the amount of insurance coverage, if greater, covering this indemnification (being for liability for damages to persons or property caused in whole or in part by any act, omission, or default of the City) is an amount that bears a reasonable commercial relationship to the Contract.

- B. In claims against City resulting from personal injury to employees of Contractor, those of its Subcontractors or anyone directly or indirectly employed by them, Contractor's indemnity obligation to City shall not be limited by any limitation on the amount or type of damages, benefits or compensation payable by or for the Contractor under Workers Compensation Acts, Disability Benefit Acts or other employee benefit acts, and Contractor expressly will waive such statutory or constitutional immunity, protection or limitation.
- C. For purposes of compliance with Florida law, this provision shall be deemed to be a part of the project specifications or the bid documents.
- D. In claims against any person or entity indemnified under this Paragraph 8.13 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation hereunder shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

## ARTICLE 9 ENGINEER'S ADMINISTRATION OF THE CONTRACT

- 9.01 The Engineer will provide administration of the Contract and will be a City representative (1) during construction, (2) until final payment is due and (3) with the City's concurrence, from time to time during the one (1) year period for correction of Work described in Paragraph 17.2.
- 9.02 The Engineer, as a representative of the City, will visit the site at intervals appropriate to the state of the Contractor's operations (1) to become generally familiar with and to keep the City informed about the progress and quality of the portion of the Work completed, (2) to endeavor to guard the City against defects and deficiencies in the Work, and (3) to determine in general if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Engineer will

not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the work. The Engineer will neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Subparagraph 8.2.1.

- 9.03 The Engineer will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Engineer will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.
- 9.04 Based on the Engineer evaluations of the Work and of the Contractor's Applications for Payment, the Engineer will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.
- 9.05 The Engineer will have authority to reject Work that does not conform to the Contract Documents.
- 9.06 The Engineer will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.
- 9.07 The Engineer will interpret and decide matters concerning performance under and requirements of, the Contract Documents on written request of either the City or Contractor. The Engineer will make initial decisions on all claims, disputes and other matters in question between the City and Contractor but will not be liable for results of any interpretations or decisions so rendered in good faith.
- 9.08 Duties, responsibilities and limitations of authority of the Engineer as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the City, Contractor and Engineer. Consent shall not be unreasonably withheld.
- 9.09 CLAIMS AND DISPUTES
  - A. Written notice that identifies the nature of each claim, dispute and other matters in question shall be delivered to the Engineer and the City no later than thirty (30) days after the start of the event giving rise to same. Claims, disputes and other matters in question arising out of or relating to this Contract, shall be subject to mediation as a condition precedent to the institution of legal proceedings by either party.

## 9.10 CLAIMS OR CONSEQUENTIAL DAMAGES

- A. The Contractor and City waive claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes:
1. Damages incurred by the City for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
  2. Damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.
- B. This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 19. Nothing contained in this Paragraph 9.10 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

## ARTICLE 10 SUBCONTRACTORS

- 10.01 A Subcontractor is a person or entity who has a direct contact with the Contractor to perform a portion of the Work at the site.
- 10.02 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the City through the Engineer the names of the Subcontractors for each of the principal portions of the Work. The Contractor shall not contract with any Subcontractor to whom the City or Engineer has made reasonable and timely objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.
- 10.03 Contracts between the Contractor and Subcontractors shall (1) require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by the terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's work, which the Contractor, by the Contract Documents, assumes toward the City and Engineer, and (2) allow the Subcontractor the benefit of all rights, remedies and redress afforded to the Contractor by these Contract Documents.

## ARTICLE 11 CITY'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

- 11.01 The City reserves the right to perform construction or operations related to the Project with the City's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under conditions of the contract identical or substantially similar to these, including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the City, the Contractor shall make such claim as provided in Paragraph 9.9.
- 11.02 The Contractor shall afford the City and separate contractor's reasonable opportunity for introductions and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's activities with theirs as required by the Contract Documents.
- 11.03 The City shall be reimbursed by the Contractor for costs incurred by the City which are payable to a separate contractor because of delays, improperly timed activities or defective construction of the Contractor. The City shall be responsible to the contractor for costs incurred by the Contractor because of delays, improperly timed activities, and damage to the Work or defective construction of a separate contractor.

## ARTICLE 12 CHANGES IN THE WORK

- 12.01 The City, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly. Such changes in the Work shall be authorized by written Change Order signed by the City, Contractor and Engineer, or by written Construction Change Directive signed by the City and Engineer.
- 12.02 The cost or credit to the City from a change in the Work shall be determined by mutual agreement of the parties or, in the case of a Construction Change Directive, by the Contractor's cost of labor, material, equipment, and reasonable overhead and profit.
- 12.03 The Engineer will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by a written order and shall be binding on the City and Contractor. The Contractor shall carry out such written orders promptly.
- 12.04 If concealed or unknown physical conditions are encountered at the site that differ materially from those indicated in the Contract Documents or from those conditions ordinarily found to exist, the Contract Sum and Contract Time shall be equitably adjusted, unless such conditions should have been known or discovered by Contractor from a reasonable examination of the project.

## ARTICLE 13 TIME

- 13.01 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.
- 13.02 The date of Substantial Completion is the date certified by the Engineer.
- 13.03 If the Contractor is delayed at any time in the commencement or progress of the Work by changes ordered in the Work, by labor disputes, fire, unusual delay in deliveries, abnormal adverse weather conditions not reasonably anticipatable, unavoidable casualties or any causes beyond the Contractor's control, or by other causes which the Engineer determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Owner may determine.

## ARTICLE 14 PAYMENTS AND COMPLETION

### 14.01 APPLICATIONS FOR PAYMENT

- A. Payments shall be made as provided in Article 4 of this Agreement. Applications for Payment shall be in a form satisfactory to the Engineer and City.
- B. The Contractor warrants that title to all Work covered by an Application for Payment will pass to the City no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the City shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or other encumbrances adverse to the City's interests.

### 14.02 CERTIFICATES FOR PAYMENT

- A. The City may withhold a Payment in whole or in part, to such extent as may be necessary to protect the City from loss for which the Contractor is responsible, including, but not limited to loss resulting from acts and omissions described in Subparagraph 8.2.2, because of:
1. defective Work not remedied;
  2. third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the City is provided by the Contractor;

3. failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
  4. reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
  5. damage to the City or another contractor;
  6. reasonable evidence that the Work will not be completed within the Contract Time and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
  7. persistent failures to carry out the Work in accordance with the Contract Documents.
- B. When the above reasons for withholding payment are removed, payment will be made for amounts previously withheld.

#### 14.03 PAYMENTS TO THE CONTRACTOR

- A. The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the City, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each subcontractor, require each Subcontractor to make payments to sub-subcontractors in similar manner.
- B. Neither the City nor Engineer shall have an obligation to pay or see to the payment of money to a Subcontractor except as may otherwise be required by law.
- C. The making of a payment, or partial or entire use or occupancy of the Project by the City shall not constitute acceptance of Work that is not performed in accordance with the Contract Documents.

#### 14.04 SUBSTANTIAL COMPLETION

- A. Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the City can occupy or utilize the Work for its intended use.
- B. When the Engineer determines that the Work or designated portion thereof is substantially complete, the Engineer will issue a Certificate of Substantial

Completion which shall establish the date of Substantial Completion, establish responsibilities of the City and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. Upon the issuance of the Certificate of Substantial Completion, the Engineer will submit it to the City and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

FINAL COMPLETION AND FINAL PAYMENT See Article 4.2B

ARTICLE 15 PROTECTION OF PERSONS AND PROPERTY

15.01 SAFETY PRECAUTIONS AND PROGRAMS

- A. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to:
  - 1. employees on the Work and other persons who may be affected thereby;
  - 2. the Work and materials and equipment to be incorporated therein; and
  - 3. other property at the site or adjacent thereto.
- B. The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons and property and their protection from damage, injury or loss. The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, a Subcontractor, a sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Subparagraphs 15.1.2 and 15.1.3, except for damage or loss attributable to acts or omissions of the City or Engineer or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Paragraph 8.13.

15.02 HAZARDOUS MATERIALS

- A. If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the

Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the City and Engineer in writing. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the City and Contractor. The Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shutdown, delay and start-up, which adjustments shall be accomplished as provided in Article 12 of this Agreement.

- B. To the fullest extent permitted by law, the City shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, Engineer, Engineer's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Subparagraph 15.2.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), and provided that such damage, loss or expense is not due to the sole negligence of a party seeking indemnity.

## ARTICLE 16 INSURANCE

16.01 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located insurance for protection from claims under workers' compensation acts and other employee benefit acts which are applicable, claims for damages because of bodily injury, including death, and claims for damage, other than to the Work itself, to property which may arise out of or result from the Contractor's operations under the Contract, whether such operations be by the Contractor or by a Subcontractor or anyone directly or indirectly employed by any of them. This insurance shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater, and shall include contractual liability insurance applicable to the Contractor's obligations. Certificates of Insurance acceptable to the City shall be filed with the City prior to commencement of the Work. Each policy shall contain a provision that the policy will not be canceled or allowed to expire until at least thirty (30) days' prior written notice has been given to the City. See Section 00800-A of the Project Manual for Contractor's Insurance Requirements, which are incorporated herein by reference.

### 16.02 WAIVERS OF SUBROGATION

- A. The City and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Engineer, Engineer consultants, separate contractors described in Article 11, if

any, and any of their subcontractors, sub-subcontractors, agents and employees for damages caused by fire or other causes of loss to the extent covered by property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the City as fiduciary. The City or Contractor, as appropriate shall require of the Engineer, Engineer's consultants, separate contractors described in Article 11, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

- B. A loss insured under the City's property insurance shall be adjusted by the City as fiduciary and made payable to the City as fiduciary for the insured's, as their interests may appear, subject to requirements of any applicable mortgagee clause. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall required Subcontractors to make payments to their sub-subcontractors in similar manner.

## ARTICLE 17 CORRECTION OF WORK

- 17.01 The Contractor shall promptly correct Work rejected by the Engineer or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections and compensation for the Engineer's services and expenses made necessary thereby, shall be at the Contractor's expense.
- 17.02 In addition to the Contractor's obligations under Paragraph 8.4, if, within one (1) year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Subparagraph 14.4.2, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the City to do so unless the City has previously given the Contractor a written acceptance of such condition. The City shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the City fails to notify the Contractor and give the Contractor an opportunity to make the correction, the City waives the rights to require correction by the Contractor and to make a claim for breach of warranty.
- 17.03 If the Contractor fails to correct nonconforming Work within a reasonable time, the City may correct it in accordance with Paragraph 7.2.

17.04 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work.

17.05 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Article 17.

## ARTICLE 18 MISCELLANEOUS PROVISIONS

### 18.01 ASSIGNMENT OF CONTRACT

- A. Neither party to the Contract shall assign the Contract without written consent of the other.

### 18.02 GOVERNING LAW

- A. The Contract shall be governed by the law of the place where the Project is located.

### 18.03 TESTS AND INSPECTIONS

- A. Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the City, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Engineer timely notice of when and where tests and inspections are to be made so that the Engineer may be present for such procedures.

## ARTICLE 19 TERMINATION OF THE CONTRACT

### 19.01 TERMINATION BY THE CONTRACTOR

- A. If the City fails to make a progress payment or a final payment for a period of thirty (30) days after such payment is due. Then the Contractor may, upon seven additional days' written notice to the City and the Engineer, terminate the Contract and recover from the City payment for Work executed and reasonable overhead, and profit relating to the work not yet performed.

### 19.02 TERMINATION BY THE CITY

- A. The City may terminate the Contract if the Contractor:
  - 1. refuses or fails to supply enough properly skilled workers or proper materials to maintain the project schedule;

2. fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
  3. disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or
  4. committed a material breach of a provision of the Contract Documents.
- B. When any of the above reasons exists, the City, may, without prejudice to any other remedy the City may have and after giving the Contractor seven days' written notice, terminate the Contract and take possession of the site and all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor and may finish the Work by whatever reasonable method the City may deem expedient. Upon request of the Contractor, the City shall furnish to the Contractor a detailed accounting of the costs incurred by the City in finishing the Work.
- C. When the City terminates the Contract for one of the reasons stated in Subparagraph 19.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.
- D. If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Engineer's services and expenses made necessary thereby, and other damages incurred by the City and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the City. The amount to be paid to the Contractor or City, as the case may be, shall be certified by the Engineer, upon application, and this obligation for payment shall survive termination of the Contract.

## ARTICLE 20 OTHER CONDITIONS OR PROVISIONS

### 20.01 DISPUTE RESOLUTION

- A. As a condition precedent to the filing of any suit or other legal proceeding, the parties shall endeavor to resolve claims, disputes or other matters in question by mediation. Mediation shall be initiated by any party by serving a written request for same on the other party. If the parties cannot agree on the selection of a mediator, then the City shall select the mediator, who, if selected solely by the City, shall be a mediator certified by the Supreme Court of Florida. No suit or other legal proceeding shall be filed until the mediator declares an impasse, which declaration, in any event, shall be issued by the mediator not later than sixty (60) days after the initial mediation conference.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

**CITY OF EDGEWATER**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**CONTRACTOR**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

END OF SECTION

SECTION 00620

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, \_\_\_\_\_, certify that I am the \_\_\_\_\_ secretary of the corporation named as Principal in the within Bid Bond; that \_\_\_\_\_ who signed the said Bid Bond on behalf of the Principal was then \_\_\_\_\_ of said corporation; that I know his signature, and his signature thereto is genuine; and that said Bid Bond was duly signed, sealed and attested for in behalf of said corporation by authority of its governing body.

AFFIX CORPORATE SEAL

END OF SECTION

Return Recorded Document to:  
Deputy City Clerk  
1108 S. Ridgewood Avenue  
Edgewater, FL 32032

**LAMONT AND HUBBELL AREA**  
**STORMWATER IMPROVEMENTS**

*Name of Project*

**City Project No. Bid #17-ES-003**  
Bond No. \_\_\_\_\_

Space Reserved for Recording Data

**COMBINATION PAYMENT AND PERFORMANCE BOND**  
**FOR**  
**PUBLIC CONSTRUCTION**

*per Section 255.05, Florida Statutes (2007)*  
*Guaranty for Construction of Public Improvements*

BY THIS BOND, We \_\_\_\_\_, as Principal  
and

\_\_\_\_\_, a  
corporation, as Surety, are bound to **CITY OF EDGEWATER, FLORIDA**, municipal corporation,  
herein called "Owner" or sometimes referred to as "City" in the sum of \$ \_\_\_\_\_

\_\_\_\_\_,  
for payment of which we bind ourselves, our heirs, personal representatives, successors, and assigns,  
jointly and severally.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the terms of that certain Contract having an effective date of \_\_\_\_\_,  
entered into by and between the principal and the City, hereinafter sometimes referred to as the Contract,  
entered into between Principal and Owner for construction of improvements reflected on the plans  
approved by the City Council as prepared by Andrew M. Giannini, P.E., Florida Registration No. 46601  
of the engineering firm Quentin L. Hampton Associates, Inc. the "Contract," being made a part of this  
bond by reference, at the times and in the manner prescribed in the contract; and
2. Promptly makes payments to all claimants, as defined in Section 255.05(1), Florida Statutes,  
supplying Principal with labor, materials, or supplies, used directly or indirectly by Principal in the  
prosecution of the work provided for in the contract (the "work"); and
3. Pays Owner all losses, damages, delay damages (including contractually authorized liquidated  
damages), expenses, costs, and attorney's fees, including appellate proceedings, that Owner sustains  
because of a default by Principal under the contract; and
4. Performs the guarantee of all work and materials furnished under the contract for the time specified in  
the contract, then this bond is void; otherwise it remains in full force.

Notice of Nonpayment and Time Limitations

Pursuant to Florida Statutes Section 255.05, as amended from time to time, a claimant, except a laborer,  
who is not in privity with the principal, shall, before commencing or not later than forty-five (45) days

after commencing to furnish labor, materials, or supplies for the prosecution of the work, furnish the Principal with a notice that he or she intends to look to this bond for protection. A claimant who is not in privity with the principal and who has not received payment for his or her labor, materials, or supplies shall deliver to the Principal and to the Surety written notice of the performance of the labor or delivery of the materials or supplies and of the nonpayment. The notice of nonpayment may be served at any time during the progress of the work or thereafter but not before forty-five (45) days after the first furnishing of labor, services, or materials by the claimant or, with respect to rental equipment, not later than ninety (90) days after the date that the rental equipment was last on the job site available for use. No action for the labor, materials, or supplies may be instituted against the Principal or the Surety unless both notices have been given. Notices required or permitted under this section may be served in accordance with Section 713.18, Florida Statutes. An action, except for an action exclusively for recovery of retainage, must be instituted against the Principal or the Surety on this bond within one (1) year after the performance of the labor or completion of delivery of the materials or supplies. An action exclusively for recovery of retainage must be instituted against the Principal or the Surety within one (1) year after the performance of the labor or completion of delivery of the materials or supplies, or within ninety (90) days after receipt of final payment (or the payment estimate containing the Owner's final reconciliation of quantities if no further payment is earned and due as a result of deductive adjustments) by the principal or Surety, whichever comes last.

Any changes in or under the contract documents and compliance or noncompliance with any formalities connected with the contract or the changes does not affect Surety's obligation under this bond.

IN WITNESS WHEREOF, this performance and payment bond is executed in duplicate originals, each of which shall be deemed an original, this \_\_\_\_\_ Day of \_\_\_\_\_, 20\_\_\_\_.

Attest:

\_\_\_\_\_  
(Name of Principal)

\_\_\_\_\_  
(As to Corporate Principal) Secretary

By: \_\_\_\_\_

\_\_\_\_\_  
(Witness to Principal)

(Corporate Seal)

\_\_\_\_\_  
(Surety)

\_\_\_\_\_  
(Witness to Surety)

By: \_\_\_\_\_

(Attorney-in-Fact)

(Corporate Seal)

NOTE: Date of BOND must not be prior to date of Contract. If Developer/Principal is Partnership, all partners should execute BOND. All BONDS signed by an agent must be accompanied by a certified copy of the authority to act.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of Florida.

SECTION 00640

PAYMENT AND PERFORMANCE BOND

**Front Page for Bond required by Section 255.05, F.S.**

**PAYMENT AND PERFORMANCE BOND**

(Public Works)

In Compliance with Sections 255.05(1)(a) and (7) Florida Statutes (2001)

**BOND No.** \_\_\_\_\_

---

**PRINCIPAL:**

Name of Developer: \_\_\_\_\_

a Florida for-profit corporation

Address: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone Number: ( ) \_\_\_\_ - \_\_\_\_

---

**SURETY:**

Address: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone Number: ( ) \_\_\_\_ - \_\_\_\_

---

**OWNER:**

City of Edgewater, Florida, a chartered municipal corporation  
P.O. Box 100 – 104 N. Riverside Drive  
Edgewater, FL 32132

Contact Person: Darren Lear

Phone Number: (386) 424-2400

---

**Amount:** \_\_\_\_\_

**City Case/Project No. Bid# 17-ES-003**

**Description of Work:**

Project Name/Location: **LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS**

**Legal Description:** Volusia County, Florida

Front Page

All other pages are subsequent to this page regardless of any numbers that may be printed thereon.

**Certificate for Filing in Public Records**

**PAYMENT AND PERFORMANCE BOND**

(Public Works)

In Compliance with Section 255.05(1)(a) Florida Statutes (2001)

**Bond No.** \_\_\_\_\_

The Principal, \_\_\_\_\_ a Florida corporation, by and through its undersigned representative, does hereby certify that the attached:

**Payment and Performance Bond No.** \_\_\_\_\_, is a true and correct copy of the fully executed financial guarantee delivered to:

**CITY OF EDGEWATER, FLORIDA**

pursuant to Section 255.05, Florida Statutes (2001); as Owner/Holder of the subject property in trust for the public, for the public construction project known as:

**LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS**

located at \_\_\_\_\_ in Volusia County, Florida, and identified by the City of Edgewater as Bid #17-ES-003.

**All claimants are called upon to take notice of the notice requirements and time limitations prescribed by Section 255.05(2), Florida Statutes (2001).**

\_\_\_\_\_  
a Florida corporation.  
Mailing Address:  
\_\_\_\_\_

By: \_\_\_\_\_  
Name/Title: \_\_\_\_\_

STATE OF FLORIDA  
COUNTY OF VOLUSIA

The foregoing Certificate of Filing was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_, by \_\_\_\_\_ as a duly authorized representative of \_\_\_\_\_, a Florida corporation, the Principal named in the attached Payment and Performance **Bond No.** \_\_\_\_\_.

*Notary, please check one:*

\_\_\_\_\_ Personally known to me  
\_\_\_\_\_ Produced identification

\_\_\_\_\_  
Notary Public, State of Florida  
*Printed Name, Commission & Term Expiration Date:*

END OF SECTION

SECTION 00650

CERTIFICATE OF INSURANCE

FOR

PUBLIC LIABILITY AND PROPERTY DAMAGE

**LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS  
BID NO. 17-ES-003**

This is to certify \_\_\_\_\_ Company has issued to  
\_\_\_\_\_, of the City of \_\_\_\_\_, State of  
\_\_\_\_\_, the following policy or policies; Public Liability Policy No.  
\_\_\_\_\_, 20\_\_\_\_, limits \_\_\_\_\_, Property Damage Policy No. \_\_\_\_\_ effective  
on \_\_\_\_\_, 20\_\_ and expiring on \_\_\_\_\_, 20\_\_\_\_, limits \_\_\_\_\_.

If at any time this coverage is to be canceled, the undersigned will notify the insured and  
\_\_\_\_\_, in writing thirty (30) days prior to cancellation of the policy.

(This certificate must be made by a duly authorized official of the Insurance Company carrying the risk, or a separate certificate of similar context executed on Insurance Company's Standard Form may be attached hereto.)

END OF SECTION

**SECTION 00660**  
**AFFIDAVIT REGARDING WORKMEN'S COMPENSATION**

State of \_\_\_\_\_)  
\_\_\_\_\_) SS  
County of \_\_\_\_\_)

\_\_\_\_\_ being duly sworn according to law, deposes and says (it, he, they) ha\_ accepted the Workmen's Compensation laws of the State of Florida, with its supplements and amendments and has insured (its, his, their) liability thereunder in accordance with the terms of said Laws with the \_\_\_\_\_ Company, under the terms of Policy No. \_\_\_\_\_ for a period from \_\_\_\_\_, 20\_\_ to \_\_\_\_\_, 20\_\_.

WITNESS:

CONTRACTOR

By \_\_\_\_\_

Title \_\_\_\_\_

Sworn to and subscribed before me this \_\_\_\_ day of 20\_\_.

My Commission Expires:

\_\_\_\_\_  
Notary Public

**END OF SECTION**

SECTION 00665  
CERTIFICATE OF INSURANCE  
FOR  
WORKMEN'S COMPENSATION  
**LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS**  
**BID NO. 17-ES-003**

This is to certify that \_\_\_\_\_, Company has issued to \_\_\_\_\_, of the City of \_\_\_\_\_, State of \_\_\_\_\_, the following policy or policies: Workmen's Compensation and Employer's Liability Policy No. \_\_\_\_\_, effective on \_\_\_\_\_, 20 \_\_\_\_\_. Re \_\_\_\_\_ Policy No. effective on \_\_\_\_\_, 20\_\_\_\_ and expiring on \_\_\_\_\_ 20 \_\_\_\_ re \_\_\_\_\_ limits \_\_\_\_\_.

If at any time this coverage is to be canceled, the undersigned will notify the insured and the \_\_\_\_\_ in writing thirty (30) days prior to cancellation of policy.

(This certificate must be made by a duly authorized official of the Insurance Company carrying the risk, or a separate certificate of similar context executed on Insurance Company's Standard Form may be attached hereto.)

END OF SECTION

SECTION 00670

CONTRACTOR'S STATEMENT UNDER OATH, TO OWNER

To:

The undersigned as Contractor, has heretofore, on the \_\_\_ day of \_\_\_\_\_, A.D., 20\_\_\_, has been awarded a Contract by you, as Owner, to furnish all the materials and labor in the construction of a project entitled “**LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS, BID NO. 17-ES-003**” for the Contract Price of \_\_\_\_\_ in accordance with plans and specifications therefore as prepared by Quentin L. Hampton Associates, Inc., P.O. Drawer 290247, 4401 Eastport Parkway, Port Orange, Florida 32129-0247.

Said project has been completed and the Contract and Plans therefore fully complied with and all of the Contract Price has been paid by you, except the Final Payment thereon, which is now due, but is being withheld until a sworn statement is furnished, as required by \_\_\_\_\_ showing whether there are any unpaid and outstanding bills in connection with said Project.

The undersigned hereby certified, under oath, that all lienors contracting directly with or directly employed by the undersigned, on said Contract, have been paid in full, and further certifies, under oath, that there are no outstanding or unpaid bills for labor performed, or materials furnished in connection with said work or improvements.

Dated at \_\_\_\_\_ this \_\_\_ day of \_\_\_\_\_, A.D., 20\_\_\_.

\_\_\_\_\_  
Contractor  
By \_\_\_\_\_  
Title \_\_\_\_\_

State of:

County of:

Sworn to and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_ A.D., 20 \_\_\_\_\_.

My Commission Expires:

\_\_\_\_\_  
Notary Public, State of

END OF SECTION

SECTION 00680

RECEIPT AND RELEASE

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned \_\_\_\_\_ of \_\_\_\_\_ was heretofore, on \_\_\_\_\_, 20\_\_\_\_, award a Contract by \_\_\_\_\_ for the Contract Price of \_\_\_\_\_ to furnish all the materials and labor in the construction of a project entitled: "**LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS, BID NO. 17-ES-003,**" in accordance with the plans and specifications therefor, as prepared by Quentin L. Hampton Associates, Inc., Engineers, and the undersigned has completed said work and fully complied with said Contract and has heretofore received the sum of \$ \_\_\_\_\_ as payment thereon.

That the undersigned has this date received from \_\_\_\_\_ the sum of \$ \_\_\_\_\_, representing the full balance due \_\_\_\_\_, as Contractor, under the terms of said Contract, and certified that said Contract has been fully performed in accordance with the terms thereof, and that \_\_\_\_\_ has paid in full all persons furnishing labor and/or materials in connection therewith, including all subcontractors and suppliers, and that there are no unpaid bills for labor performed or materials furnished in connection with said work or improvements.

That the undersigned, for value received, does hereby forever release and discharge the said \_\_\_\_\_ as described in the said Contract, from any and all liens, claims or demands whatsoever that \_\_\_\_\_ has or may have for work performed or materials furnished thereon by any subcontractor or supplier and that \_\_\_\_\_ will hold harmless the \_\_\_\_\_ from any and all loss and liability arising or to arise by reason of any unpaid bills for labor performed or materials furnished on said project in connection with said work or improvements.

IN WITNESS WHEREOF, the undersigned has hereto set \_\_\_\_\_ hand and seal this \_\_\_\_ day of \_\_\_\_\_, A.D., 20 \_\_\_\_.

Witnessed by: \_\_\_\_\_

CONTRACTOR

By \_\_\_\_\_

Title \_\_\_\_\_

State of:

County of:

Before me, the undersigned authority, personally appeared \_\_\_\_\_, to me well known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged before me that he executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this \_\_\_\_ day of \_\_\_\_\_, A.D., 20 \_\_\_\_.

My Commission Expires:

\_\_\_\_\_  
Notary Public, State of

END OF SECTION

SECTION 00690

CONSENT OF SURETY FOR FINAL PAYMENT

Project Name \_\_\_\_\_

Location \_\_\_\_\_

Project No. \_\_\_\_\_ Contract No. \_\_\_\_\_

Type of Contract \_\_\_\_\_

Amount of Contract \_\_\_\_\_

In accordance with the provisions of the above-named contract between the Owner and the Contractor, the following named surety:

\_\_\_\_\_ on the Payment Bond of the following named Contractor:

\_\_\_\_\_ hereby approves of final payment to the Contractor, and further agrees that said final payment to the Contractor shall not relieve the Surety Company named herein of any of its obligations to the following named Owner: as set forth in said Surety company's bond:

\_\_\_\_\_

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand and seal this day of \_\_\_\_\_ 20 \_\_\_\_.

\_\_\_\_\_  
(Name of Surety Company)

\_\_\_\_\_  
(Signature of Authorized Representative)

(Affix  
Corporate Seal)

TITLE \_\_\_\_\_

END OF SECTION

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

**ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE**

and

Issued and Published Jointly by



AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE  
*A Practice Division of the*  
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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## ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

### 1.01 *Defined Terms*

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

10. Claim—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
11. Contract—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.
12. Contract Documents—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. Contract Price—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. Contract Times—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. Contractor—The individual or entity with whom Owner has entered into the Agreement.
16. Cost of the Work—See Paragraph 11.01 for definition.
17. Drawings—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. Effective Date of the Agreement—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. Engineer—The individual or entity named as such in the Agreement.
20. Field Order—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. General Requirements—Sections of Division 1 of the Specifications.

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

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

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

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

## 1.02 Terminology

- A. The words and terms discussed in Paragraph 1.02.B through F 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 Paragraph 9.09 or any other provision of the Contract Documents.

C. Day:

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

D. Defective:

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

E. Furnish, Install, Perform, And Provide:

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

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

## **ARTICLE 2 – PRELIMINARY MATTERS**

### *2.01 Delivery of Bonds and Evidence of Insurance*

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

### *2.02 Copies of Documents*

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

### *2.03 Commencement of Contract Times; Notice to Proceed*

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

### *2.04 Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

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

2.06 *Preconstruction Conference; Designation of Authorized 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 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for

sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefore.

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

### **ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE**

#### **3.01 Intent**

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

#### **3.02 Reference Standards**

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

authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

### 3.03 *Reporting and Resolving Discrepancies*

#### A. Reporting Discrepancies:

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

#### B. Resolving Discrepancies:

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

### 3.04 *Amending and Supplementing Contract Documents*

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

### 3.05 *Reuse of Documents*

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

### 3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the

receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

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

##### *4.01 Availability of Lands*

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

##### *4.02 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 contiguous to the Site; and
  - 2. Those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- B. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers,

directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

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

#### 4.03 *Differing Subsurface or Physical Conditions*

- A. Notice: If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:
  1. Is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
  2. Is of such a nature as to require a change in the Contract Documents; or
  3. Differs materially from that shown or indicated in the Contract Documents; or
  4. Is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;
  5. Then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.
- B. Engineer's Review: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.
- C. Possible Price and Times Adjustments:

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

#### 4.04 *Underground Facilities*

- A. **Shown or Indicated:** The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

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

#### 4.05 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

#### 4.06 *Hazardous Environmental Condition at Site*

- A. **Reports and Drawings:** The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. **Limited Reliance by Contractor on Technical Data Authorized:** Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
  - 1. The completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
  - 2. Other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
  - 3. Any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition,

Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.

- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefore as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefore as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, 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: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and

against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

## **ARTICLE 5 – BONDS AND INSURANCE**

### *5.01 Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

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

5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- E. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- F. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
  - 1. Claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. Claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
  3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
  4. Claims for damages insured by reasonably available personal injury liability coverage which are sustained:
    - a. By any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
    - b. By any other person for any other reason;
  5. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting there from; and
  6. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:
1. With respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
  2. Include at least the specific coverage and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
  3. Include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
  4. Contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued

(and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

5. Remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
6. Include completed operations coverage:
  - a. Such insurance shall remain in effect for two years after final payment.
  - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

#### 5.05 *Owner's Liability Insurance*

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

#### 5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full 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 interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
  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, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, 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.

3. Include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
  4. Cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
  5. Allow for partial utilization of the Work by Owner;
  6. Include testing and startup; and
  7. Be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.
- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall advise Contractor in writing whether or not such other insurance has been procured by Owner.

## 5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies 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 of the insureds or loss payees there under. Owner and Contractor waive all rights against each other and their 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 Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (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 as trustee 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 utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.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, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

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

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent

by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

## **ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES**

### *6.01 Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

### *6.02 Labor; Working Hours*

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

### *6.03 Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish

satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

#### 6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
  - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
  - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

#### 6.05 *Substitutes and "Or-Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
  - 1. "Or-Equal" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
    - a. In the exercise of reasonable judgment Engineer determines that:
      - 1) It is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) It will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and
  - 3) It has a proven record of performance and availability of responsive service.
- b. Contractor certifies that, if approved and incorporated into the Work:
- 1) There will be no increase in cost to the Owner or increase in Contract Times; and
  - 2) It will conform substantially to the detailed requirements of the item named in the Contract Documents.
2. Substitute Items:
- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
  - b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefore. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
  - c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
  - d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
    - 1) Shall certify that the proposed substitute item will:
      - a) Perform adequately the functions and achieve the results called for by the general design,
      - b) Be similar in substance to that specified, and
      - c) Be suited to the same use as that specified;
    - 2) Will state:

- a) The extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
  - b) Whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
  - c) Whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
- 3) Will identify:
- a) All variations of the proposed substitute item from that specified, and
  - b) Available engineering, sales, maintenance, repair, and replacement services; and
- 4) Shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. Engineer's Evaluation: Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

- D. **Special Guarantee:** Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. **Engineer's Cost Reimbursement:** Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. **Contractor's Expense:** Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.
- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. Shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
  2. Shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

#### 6.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment

of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

- B. To the fullest extent permitted by Laws and Regulations, 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.

#### 6.08 *Permits*

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

#### 6.09 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other

professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefore as provided in Paragraph 10.05.

#### 6.10 *Taxes*

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

#### 6.11 *Use of Site and Other Areas*

- A. **Limitation on Use of Site and Other Areas:**
  - 1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
  - 2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
  - 3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

- B. Removal of Debris During Performance of the Work: During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. Cleaning: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. Loading Structures: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

#### 6.12 *Record Documents*

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

#### 6.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons 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, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

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

#### 6.14 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

#### 6.15 *Hazard Communication Programs*

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

## 6.16 *Emergencies*

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

## 6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.
  - 1. Shop Drawings:
    - a. Submit number of copies specified in the General Requirements.
    - b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.
  - 2. Samples:
    - a. Submit number of Samples specified in the Specifications.
    - b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended, and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.
- B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. Submittal Procedures:

1. Before submitting each Shop Drawing or Sample, Contractor shall have:
  - a. Reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
  - b. Determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
  - c. Determined and verified the suitability of all materials offered with respect to 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 and approval of that submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident

thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

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

E. Resubmittal Procedures:

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

6.18 *Continuing the Work*

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

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
  1. Abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
  2. Normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

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

#### 6.20 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage 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 there from 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 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not 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.

6.21 *Delegation of Professional Design Services*

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

## ARTICLE 7 – OTHER WORK AT THE SITE

### 7.01 *Related Work at Site*

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

### 7.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
  - 1. The individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. The specific matters to be covered by such authority and responsibility will be itemized; and
  3. The extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

### 7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

## **ARTICLE 8 – OWNER'S RESPONSIBILITIES**

### 8.01 *Communications to Contractor*

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

### 8.02 *Replacement of Engineer*

- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

### 8.03 *Furnish Data*

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

### 8.04 *Pay When Due*

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

8.05 *Lands and Easements; Reports and Tests*

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

8.06 *Insurance*

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

8.07 *Change Orders*

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

8.08 *Inspections, Tests, and Approvals*

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

8.09 *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.

8.10 *Undisclosed Hazardous Environmental Condition*

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

8.11 *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.

8.12 *Compliance with Safety Program*

- 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 pursuant to Paragraph 6.13.D.

**ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION**

9.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

9.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, 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.

9.03 *Project Representative*

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

responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefore as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

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

9.06 *Shop Drawings, Change Orders and Payments*

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

9.07 *Determinations for Unit Price Work*

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

conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

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

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work there under. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

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

**ARTICLE 10 – CHANGES IN THE WORK; CLAIMS**

10.01 *Authorized Changes in the Work*

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

10.02 *Unauthorized Changes in the Work*

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

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. Changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
2. Changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
3. Changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

#### 10.04 *Notification to Surety*

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

#### 10.05 *Claims*

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

any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

- C. Engineer's Action: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
  - 1. Deny the Claim in whole or in part;
  - 2. Approve the Claim; or
  - 3. Notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

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

### *11.01 Cost of the Work*

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:
  - 1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of

their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
  - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
  - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
  - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of

transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, 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 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance Contractor are required by the Contract Documents to purchase and maintain.

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

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

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

## 11.02 Allowances

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

- C. Contingency Allowance:
  - 1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

### 11.03 *Unit Price Work*

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

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

### 12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the

Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

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

- e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
- f. When both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

#### 12.02 *Change of Contract Times*

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

#### 12.03 *Delays*

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

- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

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

13.01 *Notice of Defects*

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

13.02 *Access to Work*

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

13.03 *Tests and Inspections*

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
  - 1. For inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
  - 2. That costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
  - 3. As otherwise specifically provided in the Contract Documents.

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

#### 13.04 *Uncovering Work*

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

reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefore as provided in Paragraph 10.05.

### 13.05 *Owner May Stop the Work*

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

### 13.06 *Correction or Removal of Defective Work*

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

### 13.07 *Correction Period*

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

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

#### 13.08 *Acceptance of Defective Work*

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

### 13.09 *Owner May Correct Defective Work*

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

## **ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION**

### 14.01 *Schedule of Values*

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

## 14.02 *Progress Payments*

### A. Applications for Payments:

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

### B. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
  - a. The Work has progressed to the point indicated;
  - b. The quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, 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 9.07, 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 Documents; or
    - b. There may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
  4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
    - a. To supervise, direct, or control the Work, or
    - b. For the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
    - c. For Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
    - d. To make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
    - e. To determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
  5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation

previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

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

C. Payment Becomes Due:

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

D. Reduction in Payment:

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
  - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
  - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
  - c. There are other items entitling Owner to a set-off against the amount recommended; or
  - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay

Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

#### 14.03 *Contractor's Warranty of Title*

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

#### 14.04 *Substantial Completion*

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

Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

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

#### 14.05 *Partial Utilization*

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

#### 14.06 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the

Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

#### 14.07 *Final Payment*

##### A. Application for Payment:

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

##### B. Engineer's Review of Application and Acceptance:

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

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

C. Payment Becomes Due:

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

14.08 *Final Completion Delayed*

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

14.09 *Waiver of Claims*

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

## ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

### 15.01 *Owner May Suspend Work*

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

### 15.02 *Owner May Terminate for Cause*

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

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

15.03 *Owner May Terminate For Convenience*

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

4. Reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

#### 15.04 *Contractor May Stop Work or Terminate*

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

### **ARTICLE 16 – DISPUTE RESOLUTION**

#### 16.01 *Methods and Procedures*

- A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. Elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or
2. Agrees with the other party to submit the Claim to another dispute resolution process; or
3. Gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

## **ARTICLE 17 – MISCELLANEOUS**

### *17.01 Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
  1. Delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
  2. Delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

### *17.02 Computation of Times*

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

### *17.03 Cumulative Remedies*

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

### *17.04 Survival of Obligations*

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

acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

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

17.06 *Headings*

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

END OF SECTION

## SECTION 00800

### SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (NSPE/ACEC Document No. C-700, 2007 edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

SC-1.01A.44 Delete the definition of *Substantial Completion* and insert the following in its place:

44. *Substantial Completion* - The Work (or a specified part thereof) has progressed to the point where, in the opinion of the ENGINEER as evidenced by ENGINEER's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents and that all conditions precedent to Substantial Completion have been met in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to any Work refer to Substantial Completion thereof.

Add the following definitions at the end of Article 1 - definitions of the Standard General Conditions of the Constitutions Contracts:

SC-1.01.A.52 Compensable Delay - Any delay beyond the control and without the fault or negligence of the CONTRACTOR resulting from OWNER-caused changes in the Work, differing site conditions, suspensions of the Work, or termination for convenience by the OWNER.

SC-1.01.A.53 Correction Period - The time during which the CONTRACTOR must correct defective Work or remove defective Work from the site and replace it with non-defective Work, all at no cost to the OWNER, pursuant to paragraph 13.07 of the General Conditions, as supplemented.

SC-1.01A.54 Final Completion - The date upon which final payment is due to be paid by OWNER to CONTRACTOR.

SC-1.01A.55 Excusable Delay - Any delay beyond the control and without the fault or negligence of the CONTRACTOR, the OWNER, or any other contractor caused by events or circumstances such as, but not limited to, acts of God or of the public enemy, acts of interveners, acts of the government, fires, floods, epidemics, quarantine restrictions, freight embargoes, and hurricanes, tornadoes, or new sink holes. Labor disputes and above average rainfall shall give rise only to Inexcusable Delays.

- SC-1.01A.56 Float or Slack Time - The time available in the progress schedule during which an unexpected activity can be completed without delaying the Substantial Completion of the Work.
- SC-1.01A.57 Initiation of Operation - The date when the OWNER actually begins to use the entire Work for the purposes for which it was planned, designed and built, thus commences the Correction Period. The OWNER shall not be deemed to have accepted the Work until Initiation of Operation.
- SC-1.01A.58 Modification - (a) A written amendment of the Contract Documents signed by both parties, (b) a Change Order, or (c) a Field Order. A modification may be issued after the Effective Date of the Agreement.
- SC-1.01A.59 Inexcusable Delay - Any delay caused either (i) by events or circumstances within the control of the CONTRACTOR, such as inadequate crewing, slow submittals, etc., which might have been avoided by the exercise of care, prudence, foresight, or diligence on the part of the CONTRACTOR, (ii) by weather conditions (other than hurricanes and tornadoes) or (iii) labor disputes.
- SC-1.01A.60 Non-prejudicial Delay - Any delay impacting a portion of the Work within the available total Float or Slack Time, as that term is used in Section 01310: Progress Schedules, and not necessarily preventing completion of the Work within the Contract Time.
- SC-1.01A.61 Prejudicial Delay - Any Excusable or Compensable Delay impacting the Work and exceeding the total Float Time available in the progress schedule, thus preventing completion of the Work within the Contract Time unless the Work is accelerated.
- SC-1.01A.62 Preoperational Testing (Check-Out-Testing) - All field inspections, installation checks, water tests, performance tests, and necessary corrections required of the CONTRACTOR as a condition or conditions to achieving Substantial Completion to demonstrate to the OWNER and ENGINEER that individual components of the Work have been properly constructed and operate in accordance with the Contract Documents for their intended purposes.
- SC-1.01A.63 Start-Up Testing (Demonstration Testing) - A predefined trial period required as a condition to Initiation of Operation during which CONTRACTOR is to operate the entire Work (or any part thereof agreed to by the OWNER) under actual and simulated operating conditions for the purpose (i) of making such minor adjustments and changes to the Work as may be necessary for the Work to comply with the Contract Documents and (ii) of complying with the final test requirements in the Contract Documents."
- SC-2.02 Modify paragraph 2.02A of the General Conditions:
- A. After the Agreement has been executed, the Engineer will furnish the CONTRACTOR five (5) complete sets of Contract Documents.

- SC-2.03 Delete paragraph 2.03 of the General Conditions in its entirety and insert the following in its place.
- A. A “Notice to Proceed” may be given to the Contractor at any time after the Effective date of the Agreement. The Contract Time will commence to run on the day indicated in the Notice to Proceed. In no event will the Contract Time commence to run later than the sixtieth (60th) day after the Effective Date of the Agreement.
- SC-2.05 Add the following immediately after subparagraph 2.05A.3 of the Standard General Conditions:
- 4. The submittals required in subparagraphs 1, 2 and 3 shall be as specified in Section 01310, 01340 and 01370, respectively.
- SC-3.01 Add the following immediately after paragraph 3.01C of the Standard General Conditions:
- D. When measurements are affected by conditions already established or where items are to be fitted into construction conditions, it shall be the CONTRACTOR's responsibility to verify all such dimensions at the site and the actual job dimensions shall take precedence over scale and figure dimensions on the Drawings.
  - E. The CONTRACTOR shall carefully study and compare all Drawings, Specifications and other instructions; shall test all figures on the Drawings before laying out the Work; shall notify the ENGINEER of all errors, inconsistencies, or omissions which he may discover; and obtain specific instructions before proceeding with the Work. The CONTRACTOR shall not take advantage of any apparent error or omissions which may be found in the Drawings or Specifications, and the ENGINEER shall be entitled to make such corrections therein and interpretations thereof as may be deemed necessary for the fulfillment of their intent. The CONTRACTOR shall be responsible for all errors in construction which could have been avoided by such examination and notification and shall correct, at its own expense, all Work improperly constructed through failure to notify the ENGINEER and request specific instructions.
- SC-4.03 Change the first sentence "Contractor shall promptly". Add "The CONTRACTOR shall, within three (3) days, after becoming aware thereof..."
- SC-4.06 Add a new paragraph immediately after paragraph 4.06 I. of the Standard General Conditions which is to read as following:

- J. No claim of the CONTRACTOR under paragraphs 4.02, 4.04 and 4.06 shall be allowed unless, (1) the CONTRACTOR has given the notice required in sub-paragraph 4.06D, and (2) within thirty (30) days (but before final payment) after the CONTRACTOR has given written notice, the CONTRACTOR submits to the OWNER a detailed claim setting forth the CONTRACTOR's right to an increase in the Contract Price or extension of the Contract Time as provided in Articles 11 and 12 of the Standard General Conditions.

SC-5.01 Add a new paragraph immediately after paragraph 5.01 B. Of the Standard General Conditions which is to read as follows:

- 1. The following requirements shall be met by all surety companies furnishing bid, performance, payment or other type of Bonds:
  - a. The Surety shall be rated as "A" or better as to General Policyholders Rating and Class X or better as to Financial Category by Best's Key Rating Guide, published by Alfred M. Best Company, Inc., 75 Fulton Street, New York, New York, 10038.

All Surety Companies are subject to approval and may be rejected by the OWNER without cause.

- 2. Limitations: Bonding limits or bonding capacity refers to the limit or amount of Bond acceptable on any one (1) risk.
  - a. The bonding limit of the Surety shall not exceed ten percent (10%) of the policyholder surplus (capital and surplus) as listed by the aforementioned Best's Key Rating Guide, on any one risk (penalty or amount of any one bond).
- 3. Requirements:
  - a. Policyholders surplus is required to be five (5) times the amount of any one bond.
  - b. The Agent countersigning the bond shall be resident in the County where the Project is located and/or other counties that are acceptable to the OWNER.

SC-5.01 Add a new paragraph immediately after paragraph 5.01C of the Standard General Conditions which read as follows:

- D. Contractor shall pay Owner all losses, damages, expenses, costs, and attorney's fees, including but not limited to any appellate

proceedings, which the Owner sustains because of default by the Contractor under the contract.

SC-5.04A In the case of a conflict between paragraph 5.04A of Section 00700 and one or more of the provisions of Section 00800A, the provisions of 00800A shall prevail.

SC-5.05A Delete paragraph 5.05A of the Standard General Conditions in its entirety.

SC-5.06A Delete paragraph 5.06 of the Standard General Conditions in its entirety and insert the following in its place:

A. CONTRACTOR shall purchase and maintain property insurance upon the Work at the site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in these Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. Include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;
2. Be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss and damage to the Work, temporary buildings, false work and Work in transit and shall insure against at least the following perils; fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, hurricanes, flood, tornadoes, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils as may be specifically required by the Supplementary Conditions.
3. Include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
4. Cover materials and equipment in transit for incorporation in the Work or stored at the site or at another location provided that such materials and equipment are to be included in an Application for Payment.
5. Allow for partial utilization of the Work by Owner;
6. Include testing and startup; and

7. Be maintained in effect until the later of the two; Initiation of Operation or Final Completion, unless otherwise agreed to in writing by OWNER, CONTRACTOR and ENGINEER with thirty (30) days written notice to each other additional insured to whom a certificate of insurance has been issued.

The policies of insurance required to be purchased and maintained by CONTRACTOR in accordance with this paragraph 5.06 shall comply with the requirements of Section 00800A.

- SC-5.06B Delete paragraph 5.06B of the Standard General Conditions in its entirety.
- SC-5.06D Delete paragraph 5.06D of the Standard General Conditions in its entirety.
- SC-5.06E Delete paragraph 5.06E of the Standard General Conditions in its entirety.
- SC-5.10 Delete paragraph 5.10 of the Standard General Conditions in its entirety and insert the following in its place:
- A. The CONTRACTOR shall maintain all insurance as required in Paragraph 5.06A for the Work and allow OWNER to occupy or use a portion or portions of the Work prior to Substantial Completion. CONTRACTOR shall make appropriate provisions with insurers providing the proper endorsements, if required. The property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.
- SC-6.01 Add the following sub-paragraphs immediately after paragraph 6.01B of the Standard General Conditions which are to read as follow:
- C. The Owner reserves the right to review and approve the resident superintendent.
- SC-6.02 Add the following sub-paragraphs immediately after paragraph 6.02B of the Standard General Conditions which are to read as follow:
- C. Maintenance work may be performed during hours other than regular working hours. Regular working hours are defined as daylight hours between one-half hours after sunrise to one-half hour before sunset but not more than eight (8) hours per day at 5 days per week or ten (10) hours per day at 4 days per week totaling forty (40) hours per week during weekdays. Requests to Work during other regular working hours must be submitted to the OWNER at least seventy-two (72) hours in advance of the period proposed for such irregular working hours and shall set forth the proposed schedule for such

hours to give the OWNER ample time to arrange for its personnel to be at the site of the Work.

- D. The OWNER will pay for charges of ENGINEER and construction observation performed during regular working hours. The CONTRACTOR shall pay for additional engineering and construction observations charges required during irregular hours which may be authorized under the provisions of paragraph SC-6.02C. The rate paid to the OWNER by the CONTRACTOR for additional engineering and construction observation changes shall be in accordance with the existing Contract between the OWNER and ENGINEER.
- E. The CONTRACTOR shall also pay for the costs of additional engineering charges and construction observation required during the correction of defective Work. Such additional costs incurred during irregular working hours and during the correction of defective Work, shall be a subsidiary obligation of the CONTRACTOR and no extra payment shall be made by the OWNER on account of such Work.

SC-6.06 Delete paragraphs 6.06A and 6.06B of the Standard General Conditions and insert the following in its place:

- A. The CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom OWNER may have reasonable objection and shall not be required to employ as a Subcontractor, Supplier or any person or organization against whom the CONTRACTOR has reasonable objection. A Subcontractor, Supplier or other person or organization identified in the CONTRACTOR's Bid and not objected to in writing by OWNER prior to the execution of the Agreement will be deemed acceptable to OWNER. All other Subcontractors shall be deemed to have been accepted if the OWNER delivers no written objection thereto within forty-five (45) days after CONTRACTOR's written identification of such Subcontractors.
- B. However, if the OWNER has reasonable objection to any Subcontractor identified in the Bid or subsequently, the CONTRACTOR shall submit an acceptable substitute without entitlement to any change in Contract Price. If the OWNER demands the substitution of a Subcontractor at any time without having reasonable objection to such Subcontractor, the CONTRACTOR shall comply and shall be entitled to change in Contract Price (by appropriate Change Order or Written Amendment) for the difference in cost occasioned by such substitution. After acceptance by the

OWNER, the CONTRACTOR shall make no substitution without written approval of the OWNER, which may be granted or withheld at OWNER's sole discretion. No acceptance by the OWNER of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of the OWNER to reject defective work.

SC-6.08 Add the following to the end of paragraph 6.08 in the Standard General Conditions:

- B. "The OWNER, prior to the advertisement of the Project, has applied for or has secured permits and/or licenses for the Project as described in "Location, Scope and Special Requirements."

SC-6.11 Add new sub-paragraphs immediately after paragraph 6.11A.3 of the Standard General Conditions which are to read as follows:

- A. Use of OWNER's property by the CONTRACTOR for storage of materials and equipment will be negotiated.
- B. Use of the OWNER's existing washrooms, lavatories, sanitary facilities or plumbing fixtures by the CONTRACTOR or any of its employees or Subcontractors will not be permitted.

SC-6.13 Add the following at the end of Paragraph A:

The Engineer is not responsible for the safety of any person on the jobsite other than the Engineer's own employees. The Contractor is responsible for construction means, methods, sequences, testing, techniques and procedures necessary for performing, superintending or coordinating all portions of the work in accordance with the contract documents and any health or safety precautions required by the contract documents and/or any regulatory agencies. The Engineer has no authority to exercise any control over any construction contractor or other entity or their employees in connection with their work or any health or safety precautions. The Engineer does not have the authority to stop the work of any construction contractor. The Owner agrees that the Contractor is solely responsible for jobsite safety, and warrants that this intent shall be made evident in the Owner's agreement with the Contractor. The Owner agrees that the Engineer shall be entitled to indemnification from the Contractor for any loss incurred by the Engineer arising out of any claim brought by any person or personal injuries sustained on the jobsite and warrants that this intent shall be made evident in the Owner's agreement with the Contractor. The Engineer shall be made an additional insured under the Contractor's general liability insurance policy for personal injuries to any person sustained on the jobsite.

SC-6.13 The CONTRACTOR's obligations under paragraph 6.13 of the Standard General Conditions shall continue after the date of Substantial Completion until the Initiation of Operation.

Add the following paragraph after paragraph 6.13F of the Standard General Conditions:

- G. "The CONTRACTOR shall be completely responsible for any tanks, wet wells or similar structures that may become buoyant during the construction and modification operations due to the ground water or floods and before the structure is put into operation. If there is any possibility of buoyancy of a structure, the CONTRACTOR shall take the necessary steps to prevent its buoyancy either by increasing the structures weight, by filling it with approved material or other acceptable methods. The proposed final structures have been designed against buoyancy; however, during various construction stages, methods employed by the CONTRACTOR and other conditions which may affect the buoyancy, the CONTRACTOR shall take the necessary precautions against buoyancy. Damage to any structures due to floating or flooding shall be repaired or the structures replaced at the CONTRACTOR's expense."

SC-6.17 Add the following paragraph after 6.17D.3 in the Standard General Conditions:

- 4. Shop Drawings and other submittal data shall be reviewed by the ENGINEER for each original submittal and first resubmittal; thereafter, the CONTRACTOR shall reimburse OWNER for services rendered by ENGINEER for review time of subsequent resubmittals.

SC-6.19 Add the following after paragraph 6.19C.

- D. Contractor warrants that (1) the supplies to be provided to the Owner pursuant to this Agreement are fit and sufficient for the purpose intended; (2) the supplies are merchantable, of good quality, and free from defects, whether patent or latent, in material or workmanship, and (3) the supplies sold to the Owner pursuant to this Agreement conform to the standards required by this Contract.

The Contractor further warrants that the Contractor has title to the supplies provided, in that the supplies are free and clear of all liens encumbrances, and other security interests. All warranties made in this Agreement, together with service warranties and guarantees, shall run to the Owner and its successors and assigns.

- E. Additional Warranties – Contractor further expressly warrants the manufacturer must provide a one (1) year Warranty on equipment. This shall cover 100% of all component failures due to defects in workmanship or repeated use. Routine maintenance is not included. Warranty claims shall be handled by manufacturer or distributor.

This is a minimum acceptable warranty. Warranty will be considered in bid award.

SC-6.20A In the event of a conflict between this paragraph and other provisions of the Contract Documents, this paragraph shall control.

SC-6.20B Delete paragraph 6.20B of the Standard General Conditions in its entirety and insert the following in its place:

- B. The Contractor agrees not to bring any claim, suite, action or other legal proceeding against the engineer and its consultants that may arise out of or in connection with the Work or this agreement. The Engineer and its consultants are intended third-party beneficiaries of this covenant not to sue, and are entitled to enforce this covenant in law or in equity.

SC-7.02 Delete paragraph 7.02 of the Standard General Conditions in its entirety and insert the following in its place:

7.02 A. The parties expressly acknowledge that the Work to be done contractors.

- 1. The CONTRACTOR shall cooperate with all other contractors who may be performing Work on behalf of the OWNER in the vicinity of the Work to be done under this contract, and he shall conduct his operation as to interfere to the least possible extent with the Work of such contractor.
- 2. The CONTRACTOR shall promptly make good, at its own expense, any injury or damage that may be caused by it to other contractors, employees or subcontractors or suppliers thereof.
- 3. Any difference or conflict which may arise between the CONTRACTOR and other contractors in regard to their respective Work shall be adjusted and determined by the OWNER.
- 4. If the Work is delayed because of any acts of omissions of any other contractor, the CONTRACTOR shall have no claim against the OWNER on that account.

SC-8.06 Delete paragraph 8.06 of the Standard General Conditions in its entirety.

SC-9.08 Delete paragraphs 9.08A-C in their entirety and insert the following:

A. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work there under. Claims, disputes and other matters relating to requirements of the Contract Documents pertaining to the performance and furnishing of the Work and Claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph. Written notice of each such claim, dispute or other matter will be delivered by the claimant to ENGINEER and the other party to the Agreement promptly (but in no event later than thirty (30) days) after the start of the occurrence or event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other party within sixty (60) days after the start of such occurrence or event unless ENGINEER allows an additional period of time for the submission of additional or more accurate data in support of such claim, dispute or other matter. The opposing party shall submit any response to ENGINEER and the claimant within thirty (30) days after receipt of the claimant's last submittal (unless ENGINEER allows additional time). ENGINEER will render a formal decision in writing within thirty (30) days after receipt of the opposing party's submittal, if any, in accordance with this paragraph. ENGINEER's written decision on such claim, dispute or other matter will be final and binding upon OWNER and CONTRACTOR unless a written notice of intention to appeal from ENGINEER's written decision is delivered by OWNER or CONTRACTOR to the other and to ENGINEER within thirty (30) days after the date of such decision and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to such claim, dispute or other matter in accordance with applicable Laws and Regulations within sixty (60) days of the date of such decision, unless otherwise agreed in writing by OWNER and CONTRACTOR.

SC-9.08 Re-letter paragraph 9.08D as 9.08B.

SC-9.08 Add the following sentences to the end of paragraph 9.08B of the Standard General Conditions:

"No action, either at law or at equity, shall be brought in connection with any such claim, dispute or other matter later than thirty (30) days after the date on which the ENGINEER has rendered such written decision in respect thereof. Failure to bring an action within said thirty (30) day period shall result in ENGINEER's decision being final and binding upon the OWNER and the CONTRACTOR. In no event may any such action be brought after the time at which instituting such proceedings would be otherwise barred by the applicable statute of limitations."

SC-10.01 Delete paragraph 10.01 A of the Standard General Conditions in its entirety and insert the following in its place:

- A. Without invalidating the Agreement, and without notice to any Surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by Change Orders. The CONTRACTOR shall not proceed with any Change Order until the OWNER and Engineer have signed and delivered to the CONTRACTOR the written Change Order. Upon receipt of a Change Order, CONTRACTOR shall proceed with the Work involved. All such Work shall be executed under the applicable conditions of the Contract Documents. If any Change Order causes an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, an equitable adjustment will be made as provided in Article 11 or Article 12 on the basis of a claim made by either party.

SC-12.02 Delete paragraphs 12.02A and 12.02B of the Standard General Conditions in its entirety and insert the following in its place:

- A. The Contract Time may be changed only by a Change Order or a Written Amendment. Any claim for an extension or shortening in the Contract Time shall be based on written notice delivered to the OWNER and ENGINEER within fifteen (15) days from detection or the beginning of any event or circumstance giving rise to an Excusable or Compensable Delay and setting forth the general nature of the cause of delay. Within thirty (30) days of any such detection or beginning of event, the CONTRACTOR shall provide the analysis and documentation required to ascertain the facts, as specified in Section 01310: Progress Schedules and shall provide a written statement that the adjustment claimed is the entire adjustment to which the CONTRACTOR has reason to believe it is entitled as a result of the occurrence of said event. No claim by the CONTRACTOR under this provision shall be allowed unless the CONTRACTOR has given the notice and the analysis and documentation required in this paragraph, or if asserted after final payment, as defined in paragraph 14.07 of the Standard General Conditions.
- B. No forfeiture due to delay shall be made because of any Excusable and Prejudicial Delays in the completion of the entire Work or a specified part thereof. Any such delays shall not entitle the CONTRACTOR to any change in Contract Price. The sole remedy of the CONTRACTOR shall be an extension of the Contract Time

pursuant to this Article and the provisions of Section 01310: Progress Schedules.

- C. No forfeiture due to delay shall be made because of any Compensable and Prejudicial Delays in the completion of the Work or a specified part thereof. Any such delays will entitle the CONTRACTOR solely to an extension of the Contract Time pursuant to this Article and the provisions of Section 01310: Construction Progress Schedules, of the General Requirements.
- D. No extensions of Contract Time or increases in Contract Price shall be granted for Non-prejudicial Delays of any type or for Inexcusable Delays, unless otherwise agreed to by the OWNER at his sole discretion.

SC-12.06 Paragraph 12.06B is hereby revised to provide equitable adjustment in contract time only; not contract price.

SC-13.03 Delete Paragraph 13.03B and sub-paragraphs 1, 2 and 3 in their entirety and insert the following:

- B. Payment of testing and laboratory services is specified in Section 01410; Testing and Laboratory Services for inspections and tests required by the Contract Documents. CONTRACTOR shall pay for inspections, tests or approvals covered by paragraph 13.03C. Costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.04B shall be paid as provided in said paragraph 13.04B.

SC-13.04 Amend paragraph 13.04C of the Standard General Conditions to read as follows:

“...replacement of Work of others), and any additional expenses experienced by OWNER due to delays to other contractors, an appropriate deductive Change Order shall be issued. The CONTRACTOR shall further bear the responsibility for maintaining the schedule and will be excluded from a time extension and the recovery of delay damages due to the uncovering. If, the parties...”

SC-13.06 Add the following new paragraph immediately after paragraph 13.06B of the Standard General Conditions:

- C. CONTRACTOR warrants and guarantees to OWNER and ENGINEER that all Work will be in accordance with the Contract Documents and will not be defective. The CONTRACTOR shall not be entitled to an extension of Contract Time for correcting or removing defective Work.

SC-13.07 Add the following new sub-paragraph immediately after sub-paragraph 13.07A.4:

5. When deemed necessary by OWNER, CONTRACTOR shall furnish and install at no cost to OWNER, such temporary equipment and material necessary to maintain functionality of the Work while defective Work is being corrected or replaced.

Add the following new paragraphs immediately after paragraph 13.07E:

- F. Subject to adjustments as described in sub-paragraph 13.07G, the period during which the CONTRACTOR must correct defective Work or remove it from the site and replace it with non-defective Work, all at no cost to the OWNER (the "Correction Period"), shall be no more than one (1) year. If the date of Substantial Completion is not the same date as Initiation of Operation, such Correction Period shall commence upon Initiation of Operation, not upon the date of Substantial Completion. In such cases, the time between Substantial Completion and Initiation of Operation shall not exceed one hundred (100) days.
- G. No later than thirty (30) days before Initiation of Operation the OWNER shall notify the CONTRACTOR in writing of the date upon which Initiation of Operation is expected to occur, and the CONTRACTOR shall ensure that the Work is ready in its entirety by such date for use by the OWNER as contemplated in the Contract Documents.
- H. From the date of Substantial Completion until Initiation of Operation, the CONTRACTOR shall bear all risks of injury, loss, or damage to any part of the Work arising from the elements or from any other cause. The CONTRACTOR shall rebuild, repair, restore, and make good at no cost to the OWNER, all injuries, losses, or damage to any portion of the Work occasioned by any cause and shall, at no expense to the OWNER, provide suitable drainage and erect such temporary structures and take all other actions as are necessary for the protection of the Work. Suspension of the Work or the granting of an extension of the Contract Time for any cause shall not relieve the CONTRACTOR of its responsibility for the Work as herein specified. The CONTRACTOR's responsibilities under this paragraph 13.07 are in addition to, not in lieu of, all other obligations imposed by these Contract Documents.
- I. At the OWNER's sole option, the Correction Period may be extended or shortened. The Contract Price shall be adjusted accordingly as provided in paragraphs 11 and 12 of the Standard General Conditions.

SC-14.02.A.1 Add the following sentence to end of paragraph 14.02 A.1:

Payment to Contractor for stored materials shall be the Owner's option and at the Owner's sole discretion.

SC-14.02 Add the new sub-paragraph immediately after sub-paragraph 14.02A.3:

4. Each monthly Application for Payment shall incorporate the corresponding "Monthly Progress Status Report" prepared per the requirements of Section 01310: Progress Schedules.

SC-14.02.C.1 This section is hereby deleted. The requirements of Florida Statute 218.735(a) of the Florida Prompt Payment Act shall apply.

SC-14.04.A Delete paragraph 14.04.A in its entirety and insert the following in its place:

- A. After all requirements of Section 01700: Contract Closeout have been met with respect to Substantial Completion, and when the CONTRACTOR considers the entire Work ready for its intended use, CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion.

SC-15.01 Add a new subparagraph immediately after paragraph 15.01A of the Standard General Conditions to read as follows:

1. Notwithstanding this paragraph 15.01A, if the OWNER stops Work under paragraph 13.05 or suspends the CONTRACTOR's services under paragraph 13.09 of the Standard General Conditions, or suspends the Work or any portion thereof because of the CONTRACTOR's failure to prosecute the Work without endangering persons and property, the CONTRACTOR shall not be entitled to an extension of Contract Time or increase in Contract Price.

SC-16 Delete Article 16 and all other references to "Dispute Resolution Agreement" in the Standard General Conditions. Disputes between OWNER and CONTRACTOR shall be arbitrated only if and to the extent agreed to by the parties at the time each dispute arises. The CONTRACTOR shall carry on the Work and maintain the progress schedule during any dispute, regardless of how resolved, unless otherwise mutually agreed in writing. Venue for any litigation, at law or equity or arbitration, shall lie exclusively in the place of Volusia County, Florida. This Contract, or any provision hereof, shall be construed and interpreted, and any litigation arising there from, shall be governed by the laws of the State of Florida.

SC-17.06 Add the following paragraph immediately after paragraph 17.05 of the General Conditions which are to read as follows:

17.06 The form of all submittals, notices, change orders and other documents permitted or required to be used or transmitted under the Contract Documents shall be determined by the ENGINEER. The forms for Notice to Proceed, Notice of Award and others, which the ENGINEER may use are contained in the subsequent pages of these Supplementary Conditions.

END OF SECTION

SECTION 00800-A

CONTRACTORS STANDARD INSURANCE REQUIREMENTS  
AND INDEMNIFICATION CLAUSE

I. INSURANCE

- A. Prior to commencing work, the Contractor shall provide at his own cost and expense insurance to the City of EDGEWATER as required below. The insurance companies must be licensed in the State of Florida and be rated by A.M. Best as A: Class X or better. The required insurance shall be evidenced by certificates and/or policies as determined by the City. All policies and certificates of insurance shall be approved by the City prior to inception of any work.
- B. It is required that each Certificate of Insurance and/or policy must give 30 days prior written notice of cancellation, non-renewal or adverse change to the City of EDGEWATER Finance Department by registered mail, return receipt requested. All such notices shall name the Contractor and identify the contract number.
- C. The "City of EDGEWATER," wherever used, shall be defined to include the City itself, elected officials, officers, employees, volunteers, representatives, agents and any affiliates.
- D. The "Contractor," wherever used, shall be defined to include the Contractor, any subsidiaries or affiliates, officers, employees, volunteers, representatives, agents, contractors and subcontractors.
- E. If at any time any of the required policies shall be or shall become unsatisfactory to the City as to form or substance, or if the insurance company becomes unsatisfactory to the City, the Contractor shall, upon written notice to that effect from the City, promptly obtain a new policy, submit the policy to the City for approval, and submit the Certificate of Insurance, as previously required.
- F. If at any time the Contractor shall fail to furnish and/or maintain the required insurance, this contract may be declared suspended, discontinued or terminated, at the discretion of the City. Failure of the Contractor to take out and/or maintain any of the required insurances shall not relieve the Contractor from any liability under the contract, nor shall the insurance requirements be construed to conflict with or otherwise limit the obligations of the Contractor concerning indemnification.
- G. The Contractor is required to provide new Certificates of Insurance to the City at least 20 days prior to the coverage renewal dates. If any of the insurance requirements are not complied with at their renewal dates, the City may at their option, (1) withhold payments to the Contractor until those requirements have been met or, (2) pay the renewal premium and withhold such payments from any monies due the Contractor.

- H. In the event of any claims having been filed due to any operation under this contract that are in excess of the insured amounts, the excess amount of such claim, or any portion thereof, may be withheld from payments due the Contractor until such time as the Contractor shall furnish such additional security covering such claims as may be determined by the City of EDGEWATER
- I. The Contractor shall provide the following insurance on forms no more restrictive than the latest edition of those filed by the Insurance Services Office, and name the "City of EDGEWATER" (as defined in "C" above) as an Insured to the extent of the City's interests.

II. LIABILITY INSURANCE

- A. WORKERS' COMPENSATION - STATUTORY - in compliance with the Workers' Compensation law of the State of Florida including employers liability coverage of at least \$100,000. If any operations are to be undertaken on or about navigable waters, coverage must be included for the U.S. Longshoremen and Harbor Workers Acts and Jones Act.
- B. COMMERCIAL GENERAL LIABILITY\_- with minimum limits of:
  - 1. \$2,000,000 General Aggregate
  - 2. \$1,000,000 Products - Completed Operations Aggregate
  - 3. \$1,000,000 Personal and Advertisement Injury
  - 4. \$1,000,000 Each Occurrence
  - 5. \$ 100,000 Fire Damage
- C. BUSINESS AUTOMOBILE LIABILITY - with minimum limits of \$1,000,000 per occurrence combined single limit. This insurance shall include for bodily injury and property damages the following coverages:
  - 1. Owned Automobiles
  - 2. Hired Automobiles
  - 3. Non-owned Automobiles
  - 4. Employee Non-ownership

**NOTE:** The required limits of liability for the above policies may include umbrella insurance with the umbrella policy making up the difference between the policy limits of the underlying policies and the total amount of coverage required. Such Umbrella Liability insurance shall be a "follow form" and be at least as broad as the underlying policies.

III. PROPERTY INSURANCE

- A. When this contract includes construction of and/or additions to above-ground buildings or structures, Builder's Risk and/or Installation Floater policies must be provided as follows:
1. BUILDER'S RISK - "All risk" form in the amount of 100% of the completed value of such addition, building or structure to include personal property of others in the care, custody or control of the Contractor, and shall include a flat-premium endorsement.
  2. Maximum Deductible - \$5,000 each claim
  3. Certified Copy of the policy must be provided to the City prior to the commencement of work.
  4. Waiver of Occupancy Clause or Warranty - to provide that the Builder's Risk coverage will continue to apply until final acceptance by the City of the building or addition, regardless of any prior occupancy.
  5. Flood Insurance must be provided when buildings or structures are located within an identified special flood hazard area. The Flood Insurance must protect the interest of the City and be in the amount of the total insurable value of such building or structure, or the maximum amount of flood insurance coverage available under the National Flood program, whichever is the lesser.
  6. For additions or repairs of existing buildings or structures, the "Builder's Risk Completed Form" covering the Contractor's interest in improvements, repairs, additions, or alterations to completed buildings, shall be included.
  7. Bridges, Viaducts or similar structures - the "Bridge Builders Risk Form" - "All risk" contract with the flat-premium endorsement should be utilized.
- B. INSTALLATION FLOATER - when the contract is for the installation of machinery and/or equipment into an existing structure, but does not contemplate construction of or addition to the structure itself.
1. "All Risk" coverage to include transit and installation.
  2. Amount of Insurance - 100% of installed replacement cost value
  3. Maximum Deductible - \$5,000 each claim.
  4. Cessation of Insurance - Coverage is to continue in force until final acceptance by the City.
  5. Certified Copy of the policy must be provided to the City prior to commencement of work.

6. Flood Insurance - must be provided when machinery or equipment are located within an identified special flood hazard area. The Flood Insurance must protect the interest of the city and be in the amount of the total insurable value of such machinery or equipment.

#### IV. CERTIFICATE OF INSURANCE CLAUSES

- A. All policies and Certificates of Insurance of the Contractor shall contain the following clauses and agreements:
  1. Insurers shall have no right of recovery or subrogation against the City of EDGEWATER (as defined in "C" above), it being the intention of the parties that the insurance policies so effected shall protect both parties and be primary coverage for any and all losses covered by the above described insurance.
  2. The clause "other insurance" in a policy in which the City of EDGEWATER is named as an Insured shall not apply to the City of EDGEWATER.
  3. The insurance companies issuing the policies shall have no recourse against the City of EDGEWATER (as defined in "C" above) for payment of any premiums or for assessments under any policy for insurance.
  4. Any and all deductibles in the above described insurance policies shall be assumed by and be for the account of, and at the sole risk of the Contractor.
  5. Any loss payable under the Property Insurance, if any, is to be adjusted with and made payable to the City of EDGEWATER, as their interest may appear.

#### V. CITY INDEMNIFICATION

- A. The following Indemnification Agreement shall be a provision of this contract and also shall be endorsed onto or attached to the insurance policy and Certificate of Insurance:
  1. "The Contractor agrees to protect, defend and pay on behalf of, and hold the City of EDGEWATER and its elected officials, officers, employees, volunteers, representatives, agents and affiliates free and harmless from and against all claims for personal or bodily injury or death, or property damage or destruction of tangible property including loss of use thereof, losses, penalties, damages, settlements, costs, charges, professional fees or other expenses of every kind and character in connection with and arising directly or indirectly out of this agreement and/or performance thereof, unless such claims are a result of the City of EDGEWATER sole negligence. This indemnification clause includes claims made by the employees and subcontractors of the Contractor against the Owner and the Contractor hereby

waives its entitlement, if any, to immunity under Section 440.11, Florida Statutes. Nothing contained herein shall be construed as a waiver of any immunity from or a limitation of liability the City may have under the doctrine of sovereign immunity or Chapter 768.28, Fla. Stat. This indemnification provision shall survive the completion of the project and shall be in full force and effect beyond the completion of the project or the termination of this contract.

## VI. ENGINEER INDEMNIFICATION

- A. The Contractor agrees to protect, defend and pay on behalf of, and hold the ENGINEER and its officers, employees, and affiliates free and harmless from and against all claims for personal or bodily injury or death, or property damage or destruction of tangible property including loss of use thereof, losses, penalties, damages, settlements, costs, charges, professional fees or other expenses of every kind and character in connection with and arising directly or indirectly out of this agreement and/or performance thereof, unless such claims are a result of the ENGINEER'S sole negligence. This indemnification clause includes claims made by the employees and subcontractors of the Contractor against the ENGINEER. This indemnification provision shall survive the completion of the project and shall be in full force and effect beyond the completion of the project or the termination of this contract.
  
- B. The Contractor shall be responsible for such requirements through the date of final acceptance of the project by the City. With regard to the Contractor's indemnification obligation for products and completed operations, the Contractor shall be responsible for a minimum period of at least one year subsequent to the City's acceptance of the product or completed operation.

**CITY OF EDGEWATER, FLORIDA  
INSURANCE REQUIREMENTS CHECKLIST**

Items marked "X" must be provided

<u>  </u> <u>X</u> <u>General Liability</u>	Minimum Limits Required
<u>  </u> <u>X</u> Commercial General Liability	\$ <u>2,000,000</u> General Aggregate
<u>  </u> <u>X</u> Occurrence Form	\$ <u>1,000,000</u> Product/Completed Operations Agg.
_____	\$ <u>1,000,000</u> Personal & Advertising Injury
_____	\$ <u>1,000,000</u> Each Occurrence
_____	\$ _____

<u>  </u> <u>X</u> <u>Automobile Liability</u>	
Owned, Hired & Non-Owned	\$ <u>1,000,000</u> Combined Single Limit per Occurrence

<u>  </u> <u>X</u> <u>Worker's Compensation and Employer's Liability</u>	Statutory
	\$ <u>100,000</u> Each Accident
	\$ <u>500,000</u> Disease - Policy Limit
	\$ <u>100,000</u> Disease - Each Employee

   Professional Liability - Errors & Omissions (\*To be completed by Bidder)

\* Deductible: \$ \_\_\_\_\_ \$ \_\_\_\_\_ Aggregate

\* Claims Made (Y/N): \_\_\_\_\_ \$ \_\_\_\_\_ Each Claim

\*Occurrence (Y/N): \_\_\_\_\_

\*Defense included in Limits (Y/N): \_\_\_\_\_

   X Builder's Risk/Installation Floater (\*To be completed by Bidder)

\* Flood included \$ \_\_\_\_\_ Limit \$ \_\_\_\_\_ 100% of Completed or Installed Value,

All-Risk Form

\* Transportation included \$ \_\_\_\_\_ Limit

\* Storage included \$ \_\_\_\_\_ Limit

City must be a named insured. Copy of policy will be required.

   Other

\_\_\_\_\_ \$

\_\_\_\_\_ \$

   X The Certificate of Insurance must show "The City of EDGEWATER, elected officials and employees" as an additional insured.

   X Certificates must give to the City of EDGEWATER 30 days' prior written notice of cancellation, non-renewal, or adverse change.

   X Certificates must identify bid number and bid title.

Statement of Bidder:

We understand the requirements requested and agree to comply fully.

Bidder - Authorized Signature

A complete copy of this form with original signature must accompany bid.

Signature: \_\_\_\_\_

Name/Title: \_\_\_\_\_

Company Name: \_\_\_\_\_

Date: \_\_\_\_\_

END OF SECTION

SECTION 00843

CHANGE ORDER FORM

PROJECT: \_\_\_\_\_

CHANGE ORDER NO. \_\_\_\_\_ DATE: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_

The following changes are hereby made to the Contract Documents:

<p>CHANGE IN CONTRACT PRICE:</p> <p>Original Contract Price:</p> <p>\$ _____</p>	<p>CHANGE IN CONTRACT TIMES:</p> <p>Original Contract Times:</p> <p>Substantial Completion: _____</p> <p>Final Completion:</p>
<p>Net changes from previous Change Orders No. _____ to No. _____.</p> <p>\$ _____</p>	<p>Changes in contract time from previous Change Orders No. _____ to No. _____.</p> <p>_____ Days</p>
<p>Contract Price prior to this Change Order:</p> <p>\$ _____</p>	<p>Contract Completion Date prior to this Change Order:</p> <p>Final Completion:</p>
<p>Net Increase (decrease) of this Change Order:</p> <p>\$ _____</p>	<p>Changes in contract time requested this Change Order No. _____</p> <p>_____ Days</p>
<p>Contract Price with all approved Change Orders:</p> <p>\$ _____</p>	<p>Contract Times with all approved Change Orders:</p> <p>Final Completion:</p>

CHANGES ORDERED:

- I. GENERAL – This change order is necessary to cover changes in the work to be performed under this Contract. The General Conditions, Supplementary Conditions, Specifications and all parts of the Project Manual listed in Article 1, Definitions, of the General Conditions apply to and govern all work under this change order.

The change in price and/or delivery date described, is considered to be fair and reasonable and has been mutually agreed upon in full agreement and final settlement of all claims arising out of the modification including all claims for delays and disruptions resulting from, caused by, or incident to such modifications and change orders.

II. REQUIRED CHANGES:

III. JUSTIFICATION:

IV. PAYMENT:

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Acknowledgments:

The aforementioned change, and work affected thereby, is subject to all provisions of the original contract not specifically changed by this Change Order;

It is expressly understood and agreed that the approval of the Change Order shall have no effect on the original contract other than matters expressly provided herein;

The prices quoted are fair and reasonable and in proper ratio to the cost of the original work contracted for under competitive bidding; and,

The change in price and/or delivery date described is considered to be fair and reasonable and has been mutually agreed upon in full agreement and final settlement of all claims arising out of this modification including all claims for delays and disruptions resulting from, caused by, or incident to such modifications and change orders.

RECOMMENDED BY:

Quentin L. Hampton Associates, Inc.  
(Engineer)

By: \_\_\_\_\_  
Name Typed (Date)

\_\_\_\_\_  
(Authorized Signature)

ACCEPTED BY:

\_\_\_\_\_  
(Contractor)

By: \_\_\_\_\_  
Name Typed (Date)

\_\_\_\_\_  
(Authorized Signature)

APPROVED BY:

\_\_\_\_\_  
Owner

By: \_\_\_\_\_  
Name Typed (Date)

\_\_\_\_\_  
(Authorized Signature)

END OF SECTION

SECTION 00844

APPLICATION AND CERTIFICATE FOR PAYMENT FORM

Application No. \_\_\_\_\_ Progress \_\_\_\_\_ Final \_\_\_\_\_

Engineer's Project No.: \_\_\_\_\_

Project: \_\_\_\_\_

Contractor: \_\_\_\_\_ Contract Date: \_\_\_\_\_

Contract for : \_\_\_\_\_

Application Date: \_\_\_\_\_ For Period Ending \_\_\_\_\_

Change Order Summary			
Change Orders approved in previous months by OWNER		ADDITIONS	DEDUCTIONS
TOTAL		\$ 0.00	\$ 0.00
Approved this month			
Number	Date Approved		
TOTALS		\$ 0.00	\$ 0.00
Net Change by Change Orders			\$ 0.00

1.	ORIGINAL CONTRACT SUM	\$	0.00
2.	Net Change by Change Order	\$	0.00
3.	CONTRACT SUM TO DATE (Line 1 and 2)	\$	0.00
4.	TOTAL COMPLETED AND STORED TO DATE	\$	
5.	RETAINAGE: (Column I & N, Forms 00845 and 00846)		
	a. ___% of Completed Work	\$	
	b. ___% of Stored Material	\$	
	Total Retainage (Line 5a and 5b)	\$	0.00
6.	TOTAL EARNED LESS RETAINAGE (Line 4 less Line 5 Total)	\$	0.00
7.	LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate)	\$	0.00
8.	<b>AMOUNT DUE THIS APPLICATION</b>	<b>\$</b>	<b>0.00</b>
9.	BALANCE TO FINISH, PLUS RETAINAGE (Line 3 less Line 6)	\$	0.00

Contractor's Certification

The undersigned Contractor hereby swears under penalty of perjury that (1) all previous progress payments received from the Owner on account of Work performed under the contract referred to above have been applied by the undersigned to discharge in full all obligations of the undersigned incurred in connection with Work covered by prior Applications for Payment numbered 1 through \_\_\_\_ inclusive; and (2) all materials and equipment incorporated in said Project or otherwise listed in or covered by this Application for Payment are free and clear of all liens, claims, security interest and encumbrances; (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and not defective as that term is defined in the Contract Documents.

Dated \_\_\_\_\_

\_\_\_\_\_  
(Contractor)

By: \_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Title)

COUNTY OF \_\_\_\_\_  
STATE OF \_\_\_\_\_

Before me on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, personally appeared \_\_\_\_\_, known to me, who being duly sworn, deposes and says that (s)he is the \_\_\_\_\_ of the Contractor above mentioned; that s(he) executed the above Application for Payment and statement on behalf of said Contractor; and that all of the statements contained therein are true, correct and complete.

(Notary Seal)

\_\_\_\_\_  
Notary Public  
My commission Expires \_\_\_\_\_

Engineer's Recommendation

Payment of the above AMOUNT DUE THIS APPLICATION is recommended.

Quentin L. Hampton Associates, Inc.

By: \_\_\_\_\_  
(Authorized Signature)

Date: \_\_\_\_\_

Owner's Approval

By: \_\_\_\_\_

\_\_\_\_\_  
(Title)

Acct No. \_\_\_\_\_

Date: \_\_\_\_\_

END OF SECTION





SECTION 00848

CERTIFICATE OF SUBSTANTIAL COMPLETION

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OWNER'S Project No.: \_\_\_\_\_ ENGINEER's Project No.: \_\_\_\_\_

*City of Edgewater*

Project Name: \_\_\_\_\_

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CONTRACTOR \_\_\_\_\_

Contract Date \_\_\_\_\_

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This Certificate of Substantial Completion applies to all Work under the Contract Documents or to the following specified parts thereof.

To \_\_\_\_\_  
Owner

And To \_\_\_\_\_  
Contractor

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The Work to which this Certificate applies has been inspected by authorized representatives of OWNER, CONTRACTOR and ENGINEER, and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on

\_\_\_\_\_  
Date of Substantial Completion

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Certificate of Substantial Completion  
Page 1 of 3

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item therein does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the Contract documents. When this Certification applies to a specified part of the Work the items in the tentative list shall be completed or corrected by CONTRACTOR within \_\_\_\_ days of the above date of Substantial Completion.

The date of Substantial Completion is the date upon which all guarantees and warranties begin, except as follows:

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The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities and insurance shall be as follows:

**RESPONSIBILITIES:**

OWNER \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

CONTRACTOR \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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

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This certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR'S obligation to complete the Work in accordance with the Contract Documents.

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Executed by ENGINEER on \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
(Engineer)

By \_\_\_\_\_

The CONTRACTOR accepts this Certificate of Substantial Completion on:

\_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
(Contractor)

By \_\_\_\_\_

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Certificate of Substantial Completion

Page 3 of 3

END OF SECTION

SECTION 00849

CONTRACTOR'S FINAL RELEASE OF LIEN

Before me the undersigned authority in said County and State, appeared \_\_\_\_\_ who, being first duly sworn, deposes and says that he is \_\_\_\_\_ of \_\_\_\_\_, a company and/or corporation authorized to do business under the laws of Florida, which is the Contractor on the Contract described as: \_\_\_\_\_ dated the \_\_\_ day of \_\_\_\_\_, 20\_\_\_, that the said deponent is duly authorized to make this affidavit by resolution of the Board of Directors of said company and/or corporation; that deponent knows of his own knowledge that said Contract has been complied with in every particular by said Contractor and that all parts of the work have been approved by the Owner's Engineers; that there are no bills remaining unpaid for labor, material, or otherwise, in connection with said Contract and work, and that there are no suits pending against the undersigned as Contractor or anyone in connection with the work done and materials furnished or otherwise under said Contract. Deponent further says that the final estimate which has been submitted to the owner simultaneously with the making of the affidavit constitutes all claims and demands against the Owner on account of said Contract or otherwise, and the acceptance of the sum specified in said final estimate will operate as full and final release and discharge of the Owner from any further claims, demands or compensation by Contractor under the above Contract. Deponent further agrees that all guarantees under this Contract shall be in full force from the date of this release as spelled out in the Contract Documents.

Sworn to and subscribed to before me this \_\_\_\_\_ day of \_\_\_\_\_. 20\_\_\_\_\_.

\_\_\_\_\_  
Notary Public

My Commission Expires \_\_\_\_\_

We, the \_\_\_\_\_ having heretofore executed a Performance Bond for the above-mentioned Contractor covered Project and Section as described above in the sum of \_\_\_\_\_ dollars (\$ \_\_\_\_\_), hereby agree that the Owner may make full payment of the final estimate, including the retained percentage, to said Contractor.

It is fully understood that the granting of the right to the Owner to make payment of the final estimate to said Contractor and/or his assigns, shall in no way relative the surety company of its obligations under its bond, as set forth in the Specifications, Contract and Bond pertaining to the above Project.

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

\_\_\_\_\_  
Surety Company

\_\_\_\_\_  
Attorney in Fact

(Power of Attorney must be attached if executed by Attorney in Fact)

STATE OF FLORIDA

COUNTY OF \_\_\_\_\_

Before me the undersigned authority, personally appeared to me well known as the person described in and who executed the foregoing instrument in the name of \_\_\_\_\_ and/or authority to execute the same on behalf of said \_\_\_\_\_, a corporation .

IN WITNESS WHEREOF, I have hereunto set my hand and official seal at \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_,

\_\_\_\_\_  
Notary Public

END OF SECTION

## SECTION 01000

### PROJECT REQUIREMENTS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: The Work to be done consists of the furnishing of all labor, materials and equipment, and the performance of all Work included in this Contract. The summary of the Work is presented in Section 01010: Summary of Project.
- B. Work Included:
1. The Contractor shall furnish all labor, superintendence, materials, plant power, light, heat, fuel, water, tools, appliances, equipment, supplies, and means of construction necessary for proper performance and completion of the Work. The Contractor shall obtain and pay for all necessary local building permits. The Contractor shall perform and complete the work in the manner best calculated to promote rapid construction consistent with safety of life and property and to the satisfaction of the Engineer, and in strict accordance with the Contract Documents. The Contractor shall clean up the Work and maintain it during and after construction, until accepted, and shall do all Work and pay all costs incidental thereto. He shall repair or restore all structures and property that may be damaged or disturbed during performance of the Work.
  2. The cost of incidental work described in these Project Requirements, for which there are no specific Contract Items, shall be considered as part of the general cost of doing the Work and shall be included in the prices for the various Contract Items. No additional payment will be made therefore.
  3. The Contractor shall provide and maintain such modern plant, tools, and equipment as may be necessary, in the opinion of the Engineer, to perform in a satisfactory and acceptable manner all the Work required by this Contract. Only equipment of established reputation and proven efficiency shall be used. The Contractor shall be solely responsible for the adequacy of his workmanship, materials, and equipment, prior approval of the Engineer notwithstanding.

C. Public Utility Installations and Structures:

1. Public utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, vaults, manholes, and all other appurtenances and facilities pertaining thereto whether owned or controlled by the Owner, other governmental bodies, or privately owned by individuals, firms, or corporations, used to serve the public with transportation, traffic control, gas, electricity, telephone, sewerage, drainage, water, or other public or private property which may be affected by the Work shall be deemed included hereunder.
2. The Contract Documents contain data relative to existing public utility installations and structures above and below the ground surface. These data are not guaranteed as to their completeness or accuracy and it is the responsibility of the Contractor to make his own investigations to inform himself fully of the character, condition, and extent of all such installations and structures as may be encountered and as may affect the construction operations.
3. The Contractor shall protect all public utility installations and structures from damage during the Work. Access across any buried public utility installation or structure shall be made to avoid any damage to these facilities. All required protective devices and construction shall be provided by the Contractor at his expense. All existing public utilities damaged by the Contractor shall be repaired by the Contractor, at his expense. No separate payment shall be made for such protection or repairs to public utility installations or structures.
4. Public utility installations or structures owned or controlled by the Owner or other governmental body which are shown on the Drawings to be removed, relocated, replaced, or rebuilt by the Contractor shall be considered as a part of the general cost of doing the Work and shall be included in the prices bid for the various Contract Items; therefore, no separate payment shall be made.
5. Where public utility installations or structures owned or controlled by the Owner or other governmental body are encountered during the course of the Work, and are not indicated on the Drawings or in the Specifications, and when, in the opinion of the Engineer, removal, relocation, replacement, or rebuilding is necessary to complete the Work under this Contract, such Work shall be accomplished by the utility having jurisdiction, or such Work may be ordered, in writing by the Engineer, for the Contractor to accomplish. If such work is accomplished by the utility having jurisdiction it will be carried out expeditiously, and the Contractor shall give full cooperation to permit the utility to complete the removal, relocation, replacement, or rebuilding as

required. If such work is accomplished by the Contractor, it will be paid for as extra work as provided in the Agreement.

6. The Contractor shall, at all times in performance of the Work, employ acceptable methods and exercise reasonable care and skill so as to avoid unnecessary delay, injury, damage, or destruction of public utility installations and structures; and shall, at all times in the performance of the Work, avoid unnecessary interference with, or interruption of, public utility services, and shall cooperate fully with the owners thereof to that end.
7. The Contractor shall give written notice to Owner and other governmental utility departments and other owners of public utilities of the location of his proposed construction operations, at least 48-hours in advance of breaking ground in any area or on any unit of the Work.
8. The maintenance, repair, removal, relocation, or rebuilding of public utility installations and structures, when accomplished by the Contractor as herein provided, shall be done by methods approved by the owners of such utilities.

## 1.02 DRAWINGS AND PROJECT MANUAL

- A. Drawings: When obtaining data and information from the Drawings, figures shall be used in preference to scaled dimensions, and large-scale drawings in preference to small-scale drawings.
- B. Supplementary Drawings:
  1. When, in the opinion of the Engineer, it becomes necessary to explain more fully the Work to be done or to illustrate the Work further or to show any changes which may be required, drawings known as Supplementary Drawings, with specifications pertaining thereto, will be prepared by the Engineer, and the Contractor will be furnished one (1) complete set of reproducible Mylar sepias (24 inches by 36 inches) and one (1) reproducible copy of the Project Manual.
  2. The Supplementary Drawings shall be binding upon the Contractor with the same force as the Contract Drawings. Where such Supplementary Drawings require either less or more than the estimated quantities of Work, credit to the Owner or compensation therefore to the Contractor shall be subject to the terms of the Agreement.

C. Contractor to Check Drawings and Data:

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

D. Specifications: The Technical Specifications consist of three (3) parts: General, Products, and Execution. The General part of a Specification contains General Requirements which govern the Work. The Products and Execution parts modify and supplement the General Requirements by detailed requirements for the Work and shall always govern whenever there appears to be a conflict.

E. Intent:

1. All Work called for in the Specifications applicable to this Contract, but not shown on the Drawings in their present form, or vice versa, shall be of like effect as if shown or mentioned in both. Work not specified in either the Drawings or in the Specifications, but involved in carrying out their intent or in the complete and proper execution of the Work, is required and shall be performed by the Contractor as though it were specifically delineated or described.
2. The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, the interpretation of these Specifications shall be made upon that basis.

## 1.03 MATERIALS AND EQUIPMENT

### A. Manufacturer:

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

### B. Delivery:

1. The Contractor shall deliver materials in ample quantities to ensure the most speedy and uninterrupted progress of the Work so as to complete the Work within the allotted time.
2. The Contractor shall also coordinate deliveries in order to avoid delay in, or impediment of, the progress of the work of any related Contractor.

### C. Tools and Accessories:

1. The Contractor shall, unless otherwise stated in the Contract Documents, furnish with each type, kind, or size of equipment, one (1) complete set of suitably marked high grade special tools and appliances which may be needed to adjust, operate, maintain, or repair the equipment. Such tools and appliances shall be furnished in approved painted steel cases, properly labeled and equipped with good grade cylinder locks and duplicate keys.
2. Spare parts shall be furnished as specified herein and as recommended by the manufacturer necessary for the operation of the equipment, not including materials required for routine maintenance.
3. Each piece of equipment shall be provided with a substantial nameplate, securely fastened in place and clearly inscribed with the manufacturer's name, year of manufacture, serial number, weight, and principal rate data.

### D. Service of Manufacturer's Engineer:

1. The Contract Prices for equipment shall include the cost of furnishing a competent and experienced engineer or superintendent who shall represent the manufacturer and shall assist the Contractor, when required, to install,

adjust, test, and place in operation, the equipment in conformity with the Contract Documents.

2. After the equipment is placed in permanent operation by the Owner, such engineer or superintendent shall make all adjustments and tests required by the Engineer to prove that such equipment is in proper and satisfactory operating condition, and shall instruct such personnel as may be designated by the Owner in the proper operation and maintenance of such equipment.

#### 1.04 INSPECTION AND TESTING

##### A. General:

1. For tests specified to be made by the Contractor, the testing personnel shall make the necessary inspections and tests, and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Contract Documents. Five (5) copies of the reports shall be submitted, and authoritative certification thereof must be furnished to the Engineer as a prerequisite for the acceptance of any material or equipment.
2. If, in the making of any test of any material or equipment, it is ascertained by the Engineer that the material or equipment does not comply with the Contract Documents, the Contractor will be notified thereof, and he will be directed to refrain from delivering said material or equipment, or to remove it promptly from the site or from the Work and replace it with acceptable material, without cost to the Owner.
3. Tests of electrical and mechanical equipment and appliances shall be conducted in accordance with the recognized test codes of the ANSI, ASME, or the IEEE, except as may otherwise be stated herein.
4. The Contractor shall be fully responsible for the proper operation of equipment during testing and instruction periods and shall neither have nor make any claim for damage which may occur to equipment prior to the time when the Owner formally takes over the operation thereof.

##### B. Costs:

1. All inspection and testing of materials furnished under this Contract will be provided by the Contractor, unless otherwise expressly specified.
2. The cost of shop and field tests of equipment and of certain other tests specifically called for in the Contract Documents shall be borne by the Contractor, and such costs shall be deemed to be included in the Contract Price.

3. Materials and equipment submitted by the Contractor as the equivalent to those specifically named in the Contract may be tested by the Owner for compliance. The Contractor shall reimburse the Owner for the expenditures incurred in making such tests of materials and equipment which are rejected for non-compliance.

C. Certificate of Manufacture:

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

D. Shop Tests:

1. Each piece of equipment for which pressure, duty, capacity, rating, efficiency, performance, function, or special requirements are specified shall be tested in the shop of the maker in a manner which shall conclusively prove that its characteristics comply fully with the requirements of the Contract Documents.
2. Five (5) copies of the manufacturer's actual test data and interpreted results thereof, accompanied by a certificate of authenticity sworn to by a responsible official of the manufacturing company and/or independent laboratory, shall be submitted to the Engineer for approval.
3. The cost of shop tests and of furnishing manufacturer's preliminary and shop test data of operating equipment shall be borne by the Contractor.

E. Start-up Tests:

1. As soon as conditions permit, the Contractor shall furnish all labor, materials, and instruments and shall make start-up tests of equipment.
2. If the start-up tests disclose any equipment furnished under this Contract which does not comply with the requirements of the Contract Documents, the Contractor shall, prior to demonstration tests, make all changes, adjustments, and replacements required. The furnishing Contractor shall assist in the start-up tests as applicable.

F. Demonstration Tests:

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

1.05 LINES AND GRADES

A. Grade:

1. All work under this Contract shall be constructed in accordance with the lines and grades shown on the Drawings, or as given by the Engineer. The full responsibility for keeping alignment and grade shall rest upon the Contractor.
2. The vertical bench marks provided is USGS "Public Records" monumentation and the horizontal control is the monumentation on plats contained in the "Public Records of Volusia County."

B. Surveys:

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

C. Safeguarding Marks:

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

2. The Contractor shall safeguard all existing and known property corners, monuments, and marks adjacent to but not related to the Work and shall bear the cost of re-establishing them if disturbed or destroyed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01010

### SUMMARY OF PROJECT

#### PART 1 - GENERAL

##### 1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. This Contract is for the construction of the **LAMONT AND HUBBELL AREA STORMWATER IMPROVEMENTS**. The work consists of furnishing all labor, equipment, and materials for the construction of the facilities consisting of, but not limited to, the following:

This project consists of retrofitting an existing area with stormwater improvements and water main replacement. Construction items include approximately 1250 LF of 6" and 2" water main, 940 LF of various sizes of exfiltration pipe, 700 LF of sodded swales, 120 LF of various sizes of reinforced concrete pipe, 10 drainage structures, and the installation of one baffle box.

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

##### 1.02 CONTRACTOR'S USE OF PREMISES

- A. The Contractor shall assume full responsibility for the protection and safekeeping of products and materials at the job site. If additional storage or work areas are required, they shall be obtained by the Contractor at no additional cost to the Owner.

### 1.03 PROJECT SEQUENCE

- A. The Contractor shall establish his work sequence based on the use of crews to facilitate completion of construction and testing within the specified Contract time.

END OF SECTION

## SECTION 01025

### MEASUREMENT AND PAYMENT

#### PART 1 - GENERAL

- A. Separate payment will be made only 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.
- B. The Contractor's attention is called to the fact that cleanup is considered a part of the work of construction. No payment will be made until cleanup is essentially complete.
- C. 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 if not shown as a separate pay item.
  - 1. Excavation, including necessary pavement base removal.
  - 2. Shoring and sheeting.
  - 3. Dewatering and disposal of surplus water.
  - 4. Structural Fill.
  - 5. Backfill.
  - 6. Grading.
  - 7. Cleanup.
  - 8. Testing and placing system in operation.
  - 9. Any material and equipment required to be installed and utilized for the test.
  - 10. Pipe, structures, pavement replacement and/or appurtenances included within the limits of lump sum work.
  - 11. Maintaining the existing quality of service during construction.
  - 12. Appurtenant work as required for a complete and operable system.
- D. No payment shall be made for work constructed outside the authorized limits of work

#### PART 2 - MATERIALS AND EQUIPMENT

##### **2.01 Pre-Construction Video**

##### **Bid Item A1**

Lump sum payment will be made based on delivery to the City of two copies with documentation of the video for the project route. The contract lump sum price shall be full compensation for all materials and work necessary to complete the professional videotaping in accordance with the project specifications. Construction work shall not start until DVD's are delivered and approved by the project representative.

## **2.02 Erosion Control and Pollution Abatement**

**Bid Item A2**

Lump sum payment will be made based on completion of erosion control silt fencing, floating turbidity barriers, and other means necessary in accordance with the contract plans and specifications. Payment will be full compensation for all materials, labor, equipment, and work necessary to complete the work in accordance with City/State/Federal requirements and the contract plans and specifications. Application for NPDES permit including NOI and application fee are included, if required.

## **2.03 Clearing and Grubbing**

**Bid Items A3**

Lump sum payment will be made for all clearing and grubbing. Payment shall include all costs associated with clearing and grubbing the site and removing trees and vegetation scheduled for removal in accordance with FDOT Standard Specification Section 110. The cost of all tree protection requirements is included in this unit price. This item includes the proper disposal of all cleared materials.

## **2.04 Indemnification**

**Bid Item A4**

Payment for Indemnification: as further described in Section 01030. In consideration of the Contractor's Indemnity Agreement as set out in the Contract Documents, the Owner specifically agrees to pay the Contractor \$1,000.00 and other good and valuable consideration, receipt of which is acknowledged upon signing of the Agreement.

## **2.05 Survey Layout**

**Bid Item A5**

Payment shall be made at the lump sum amount or portion thereof for the layout of all proposed improvements by a licensed surveyor registered in the State of Florida. Work shall include the staking of right-of-way and easement lines adjacent to proposed improvements. Surveyor shall verify existing grades and other tie-in locations and notify Engineer of any discrepancies. Engineer shall provide design bench mark information.

## **2.06 Maintenance of Traffic**

**Bid Item A6**

Payment for traffic control will be made at the contract lump sum price which price and payment shall be full compensation for the material, labor, equipment and all other related work necessary to complete required traffic control during the period of construction affecting the flow of traffic within the project area or adjacent collector roads and highways. This item shall include the costs to prepare approved traffic control plans as well as the full cost to implement the approved plans. For areas under County or State control, traffic control shall be provided in accordance with each entity's requirements. Payment shall be made as a percentage of the total construction cost.

## **2.07 Grading**

**Bid Item A7**

Lump sum payment shall be made for the completed grading including rough grading, import/export of fill, final grading and related work.

**2.08 Hand Locate & Expose Existing Utilities****Bid Items A8**

Payment at the applicable lump sum price will be made based on completion of exposing, as specified in Section 01300, existing City utilities and all other utilities within the contract work limits. The contract lump sum price will be full compensation for all materials and work necessary to complete the item within the right-of-ways or easements shown on the contract plans, and provide a sketch of each major intersection or congested area with the Contractor's proposed solution to conflicts found prior to construction.

**2.09 Water Main****Bid Item B1**

Payment shall be made at the contract unit price per lineal foot as measured along the centerline of pipe from its origination point to the end of the pipe. The unit price shall be full compensation for all selective clearings, hand digging adjacent to trees to remain, dewatering, excavation, backfill, compaction, and testing, materials, fittings, restrained joints, thrust blocking, equipment, labor, successful hydrostatic testing, and satisfactory bacteriological testing, (water lines only), right-of-way restoration where separate items (driveways, sidewalks, etc.) are not paid for separately and all items necessary to complete installation of the pipe. Payment for removal of existing water lines, where shown, shall be contained as part of this unit price pay item.

**2.10 Gate Valve w/ Valve Box (with concrete collars)****Bid Item B2**

Payment will be made on each installation at the applicable unit price for the installation of each gate valve and valve box with collar as shown on the plans. The contract unit price will be full compensation for all materials and work necessary to complete the installation in accordance with the drawings and specifications including adjustment of valve box to final grade and shall include restrained joint attachment of valve to adjacent fittings where shown as part of this unit price.

**2.11 Tie-Ins****Bid Item B3**

Lump sum payment will be made at the applicable unit price for the cost of each tie-in performed. The unit price will be full compensation for all materials and labor required to satisfactorily accomplish this item as detailed in the plans and specifications. Payment includes the cost of any valves or fittings required to satisfactorily complete the tie-ins.

**2.12 Water Services****Bid Item B4**

Payment will be made at the contract unit price for all materials, equipment and labor required to provide and install the service connections per City detail. The connections shall be installed at the sizes and locations directed in the field. The Contractor shall provide and install double strap service saddle, tap, corp stop, blue polyethylene tubing, lockable curb stop and City standard meter box in accordance with City subdivision standard and as shown on the plans. City personnel will cut-over existing meters to new services when line is activated. This item includes the supply and installation of meter box manufactured by CDX model WB00-1015-12 and lid manufactured by CDS model WC00-1015-2TR

**2.13 Ductile Iron Fittings (water main) Add or Delete**

**Bid Item B5**

Payment shall be made at the contract unit price per pound for all ductile iron/cast iron fittings installed by the Contractors as directed by the Engineer. This item is included in the contract to cover the cost of additional fittings that are not shown on the project plans which are required to meet modified routing due to field conditions. This item includes the cost of providing and installing “restrained joints” at both ends of each additional fitting installed.

This contract unit price will apply as a credit to the City for all fittings that are deleted from the contract. The credit will apply to fittings shown on the project plans that are not installed in the field.

**2.14 Cap and Abandon Existing WM/Sewer Main**

**Bid Item B6**

Lump sum payment shall be made for satisfactory abandonment of existing water mains as shown on the plans.

**2.15 Fire Hydrant Assembly**

**Bid Item B7**

Payment of the applicable unit price shall be full compensation for furnishing all plant, labor and material, including tee, valve box and valve, for installation of new complete City standard fire hydrant assemblies, including City standard stainless steel bolts and valve stem connector and stem shaft, tested and in operation as shown on the contract standard details sheet. This item includes the use of hydrant extensions to bring the hydrant to the proper elevation with respect to the final field grade at the hydrant location, and painting of hydrant to City standard color.

**2.16 Storm Structures**

**Bid Items C1**

Payment for storm structures will be made for each manhole or inlet or headwall constructed and will include full compensation for all excavation, backfill, concrete, brickwork, linings, benches, concrete aprons, grates, and frames and covers and baffles, all constructed in accordance with the drawings.

**2.17 Storm Pipe**

**Bid Items C2**

Payment shall be made at the applicable unit price per linear foot and shall be full compensation for furnishing all plant, labor, materials and equipment and constructing the storm sewer complete and ready for operation as shown on the project plans and specifications including approved filter fabric wrap per plan detail at each joint of pipe. The cost for road restoration in the area of new storm sewer placement shall be paid for by the appropriate pay item.

**2.18 Sodded Swales**

**Bid Items C3**

Payment shall be made at the unit price for each linear foot of swale constructed per the grade and locations shown on plans and as directed in the field. Payment shall include protection of existing tree roots, introduction of topsoil material, and all other work required, including sodding of all disturbed areas with like kind sod.

**2.19 Asphalt Road Open Cut & Repair Including Striping**

**Bid Item D1**

Payment will be made at the contract unit price for full compensation for all material and work necessary to complete the installation in accordance with the drawings and specifications, including sub-base, base, asphalt surface, testing and the raising of any valve boxes or manhole frames and covers to final paving grade.

**2.20 1" Asphalt Overlay**

**Bid Item D2**

Payment will be made at the contract unit price for full compensation for all material and work necessary to complete the installation of 1" Asphalt Overlay in accordance with the drawings and specifications, including asphalt surface, testing and the raising of any valve boxes or manhole frames and covers to final paving grade. This item includes restoration of existing striping.

**2.21 Concrete Driveway**

**Bid Items D3**

Payment will be made at the applicable unit price per square yard of concrete. All driveways shall be 6 inches thick, concrete. Payment includes demolition, removal of existing driveways, and sawcut of edges of existing material as well as construction of expansion/contraction and control joints to meet FDOT or local jurisdiction specifications.

**2.22 Sodding**

**Bid Item D4**

Payments shall be made at the applicable unit price for the type of sod installed and shall be full compensation for furnishing all plant labor, materials and equipment necessary to furnish and properly install sod without gaps or overlaps within the limits shown on the drawings. Sod shall match the type of sod that was previously existing. Items shall include watering and maintenance for a one-month period. Dead or insect infested sod shall be replaced by the Contractor at no cost to the Owner if manifestation of damage becomes apparent within the one month maintenance period.

**2.23 Sewer Lateral Adjustment/Replacement**

**Bid Item D5**

Payment will be made at the contract unit price for each sewer lateral adjustment or replacement including all materials, equipment, and labor required to provide and install the service connections per City subdivision standards and as shown on the plans. The contractor shall coordinate the timely replacement with the City and resident effected. This item includes reinstallation of cleanout as previously existed in the field.

**2.24 As-Built Survey**

**Bid Item D6**

Lump sum payment will be made based on delivery of record drawings produced by a licensed surveyor conforming to the specifications. Periodical record drawings shall be submitted with each pay estimate on which the Engineer shall rely to ensure the improvements are constructed in accordance with the design locations and elevations. Progress payments submitted without

updated record drawings to document work constructed that pay period shall be a basis for rejection of the pay request until such time as adequate record drawings are submitted.

**2.25 Compliance with Florida "Trench Safety Act"**

**Bid Item D7**

Lump sum payment will be made based on the contractor's full and complete compliance with the State of Florida Trench Safety Act.

**2.26 Unsuitable Material Excavation and Replacement**

**Bid Items D8**

Where field conditions indicate the necessity for removing unsuitable material or muck from trench or structure excavations; and where such excavations require the removal of muck or other unsuitable material as determined by the Engineer, and replacement with suitable material, payment will be made at the contract unit price per cubic yard for such muck material removed and replaced with clean fill upon the basis of in place measurement of the material removed.

**END OF SECTION**

## SECTION 01027

### APPLICATION FOR PAYMENT

#### PART I - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: Submit Application for payment to the Engineer in accordance with schedule established by Conditions of the Contract and Agreement between Owner and Contractor. Contractor shall use the Application and Certificate for Payment Form included on Section 00844 as the official pay request form.
- B. Related Requirements Described Elsewhere:
  - 1. Agreement: Section 00500.
  - 2. Construction Progress Schedules: Section 01310.
  - 3. Schedule of Values: Section 01370.
  - 4. Construction Photographs: Section 01380.
  - 5. Project Record Documents: Section 01720.

##### 1.02 FORMAT REQUIRED

- A. Submit applications typed on the form provided in Division 0, Section 00844: Application and Certificate for Payment Form, with itemized data typed on 8-1/2 inch x 11 inch or white paper continuation sheets.
- B. Provide itemized data on continuation sheets of format, schedules, line items, and values specified on the Application and Certificate for Payment Form. The Contractor shall use the item descriptions and contract values included in schedule of values, approved and accepted by the Engineer as a basis for preparation of the Application for Payment Form.

##### 1.03 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

- A. Application Form:
  - 1. Fill in required information, including that for Change Orders executed prior to date of submittal of application.
  - 2. Fill in percent complete for each activity and dollar values to agree with respective percents.
  - 3. Execute certification with signature of a responsible officer of Contractor.

B. Continuous Sheets:

1. Fill in total of all scheduled component items of the Work, with item number and schedule dollar value for each item.
2. Fill in dollar value in each column for each scheduled line item when Work has been performed or products stored. Round off values to nearest dollar, or as specified for Schedule of Values.
3. List each Change Order executed prior to date of submission, at the end of the continuation sheets. List by Change Order Number, and description, as for an original component item Work.
4. To receive approval for payment on component material stored on site, submit copies of the original invoices with Application and Certificate for Payment.
5. As provided for in the Application and Certificate for Payment Form, the Contractor shall certify, for each current pay request, that all previous progress payments received from the Owner, under this Contract, have been applied by the Contractor to discharge in full, all obligations of the Contractor in connection with Work covered by prior Applications for Payment, and all materials and equipment incorporated into the Work are free and clear of all liens, claims, security interest, and encumbrances. Contractor shall attach to each Application and Certificate for Payment like affidavits by all Subcontractors.

1.04 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. Contractor shall submit suitable information, with a cover letter identifying:

1. Project.
2. Application number and date.
3. Detailed list of enclosures.
4. For stored products:
5. Item number and identification as shown on application.
6. Description of specific material.

B. Submit one (1) copy of data and cover letter for each copy of application.

- C. The Contractor is to maintain an updated set of drawings to be used as record drawings in accordance with Section 01720: Project Record Documents. As a prerequisite for monthly progress payments, the Contractor is to exhibit the updated record drawings for review by the Owner and the Engineer.
- D. Each monthly application for payment shall incorporate the corresponding “monthly progress status report” and updated construction schedule, prepared in accordance with the requirements of Section 01310: Construction Progress Schedules.
- E. As a prerequisite for payment, Contractor shall submit a duly executed letter from surety consenting to payment due and progress to date.
- F. Provide construction photographs in accordance with Section 01380: Construction Photographs.

#### 1.05 PREPARATION OF APPLICATION FOR FINAL PAYMENT

- A. Fill in application form as specified for progress payments. Provide information as required by the General Conditions and Section 01700: Contract Closeout.
- B. Furnish evidence of completed operations and insurance in accordance with the General Conditions.
- C. Provide Contractor’s Final Release of Lien (Section 00849) and other close-out submittals as required by the General Conditions.

#### 1.06 SUBMITTAL PROCEDURE

- A. Submit Application for Payment to the Engineer at the time stipulated in the Agreement, or as agreed to at the pre-construction meeting. Review the percents complete with the Engineer and resolve any conflict or discrepancies.
- B. Number of copies for each Application for Payment: Five (5) copies plus additional copies for Contractor’s needs.
- C. When the Engineer finds the Application and Certificate for Payment Form is properly completed and correct, he will execute the Certificate for Payment and transmit the forms to the Owner, with a copy to the Contractor.

#### PART II - PRODUCTS (NOT USED)

PART III - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01091

### REFERENCE SPECIFICATIONS

#### PART 1 - GENERAL

##### 1.01 GENERAL

- A. **Applicable Publications.** Whenever in these Specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the Work is advertised for bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth herein or shown on the Drawings shall be waived because of any provision of or omission from said standards or requirements.
- B. **Assignment of Specialists.** In certain instances, specification test requires (or implies) that specific work is to be assigned to specialist or expert entities who must be engaged for the performance of the Work. Such assignments shall be recognized as special requirements over which the Contractor has no choice or option. These requirements shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the Work. They are not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of Work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of Contract requirements remains with the Contractor.

##### 1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Without limiting the generality of other requirements of the Specifications, all Work specified herein shall conform to or exceed the requirements of such referenced documents which are not in conflict with the requirements of these Specifications or applicable codes.
- B. References herein to "Building Code" shall mean the latest edition of the Florida Building Code. The latest edition of the code as approved and used by the local agency as of the date of award as adopted by the agency having jurisdiction shall apply to the Work herein, including all addenda, modifications, amendments, or other lawful changes thereto.
- C. In case of conflict between codes, reference standards, Drawings, and the other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the Engineer for clarification and directions prior

to ordering or providing any materials or labor. The Contractor shall bid the most stringent requirements.

- D. Applicable Standard Specifications. The Contractor shall construct the Work specified herein in accordance with the requirements of the Contract Documents and the referenced portions of those referenced codes, standards, and specifications listed.

PART II - PRODUCTS (Not Used)

PART III - EXECUTION (Not Used)

END OF SECTION

## SECTION 01100

### SPECIAL PROJECT PROCEDURES

#### PART 1 - GENERAL

##### 1.01 PUBLIC NUISANCE

- A. The Contractor shall not create a public nuisance including, but not limited to, encroachment on adjacent lands, flooding of adjacent lands, or excessive noise.
- B. Sound levels measured by the Engineer shall not exceed 50 dBA from 7 P.M. to 7 A.M. or 60 dBA 7 A.M. to 7 P.M. This sound level shall be measured at the exterior of the nearest exterior wall of the nearest residence. Levels at the equipment shall not exceed 85 dBA at any time. Sound levels in excess of these values are sufficient cause to have the Work halted until equipment can be quieted to these levels. Work stoppage by the Engineer or Owner for excessive noise shall not relieve the Contractor of the other portions of this Specification including, but not limited to, completion dates and bid amounts.
- C. No extra charge may be made for time lost due to work stoppage resulting from the creation of a public nuisance.

##### 1.02 JURISDICTIONAL DISPUTES

- A. It shall be the responsibility of the Contractor to pay all costs that may be required to perform any of the Work shown on the Drawings or specified herein in order to avoid any work stoppages due to jurisdictional disputes. The basis for subletting Work in question, if any, shall conform to precedent agreements and decisions on record with the Building and Construction Trades Department, AFL-CIO, dated June, 1973, including any amendments thereto.

##### 1.03 EXCAVATION AROUND AND CONNECTION TO EXISTING UTILITIES

- A. It is essential that the Contractor understand that the existing Owner's facilities must be kept in operation with minimal impact and shut-downs. To this end, the Contractor shall coordinate and consult with the Owner's operating personnel before excavating around or cutting into existing utilities on the site. Existing utilities of major concern are water, sanitary sewer, electrical power conduits, phone and television cables, instrumentation conduits, and cables.
- B. Some areas within the construction site may require hand excavation due to the congestion of underground piping systems and/or due to the criticality of piping systems that may be damaged unavoidably during machine excavation.

- C. Cover for underground piping shall not be less than that indicated on the Drawings, up to a minimum of 30 inches of cover where obtainable. In areas where other piping conflicts preclude the minimum cover desired, the piping shall be laid to provide the maximum cover obtainable.
- D. All connections to existing piping systems shall be made as shown or indicated on the Drawings after consultation, cooperation, and coordination with the Owner's management personnel. Some such connections may have to be made during off-peak hours (late night or early morning hours). The Contractor shall give a minimum of three (3) working days notice to the Owner when tie-ins with the existing plant utilities are required.
- E. For major utility pipeline tie-ins and relocations, the Contractor shall submit a detailed Plan of Action for review and approval by the Owner and the Engineer. No major utility relocation or tie-ins shall proceed until the Plan of Action for that Work is approved.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01200

### PROJECT MEETINGS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. Scope of Work:

1. The Contractor shall cooperate and coordinate with the Engineer to schedule and administer the preconstruction meeting, periodic progress meetings, and specifically called meetings throughout the progress of the Work. The Engineer shall:
  - a. Prepare agenda for meetings.
  - b. Make physical arrangements for meetings.
  - c. Preside at meetings.
  - d. Take and distribute meeting minutes.
2. Representatives of Contractor, subcontractors, and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.
3. The Owner shall attend meetings to ascertain that the Work is expedited consistent with Contract Documents and construction schedules.
4. The Engineer shall record the preconstruction meeting. A copy of the minutes of each progress meeting shall be available five business days after the meeting.

###### B. Related Requirements Described Elsewhere:

1. Progress Schedules: Section 01310.
2. Shop Drawings: Section 01340.
3. Project Record Documents: Section 01720.

##### 1.02 PRECONSTRUCTION MEETING

- A. Engineer will schedule a preconstruction meeting no later than twenty (20) days after date of Notice to Proceed. The meeting shall be scheduled at the convenience of all parties.
- B. Location: A local site, convenient for all parties, designated by the Engineer.
- C. Attendance:

1. Owner's representative.
  2. Engineer and his professional consultants.
  3. Resident project representative.
  4. Contractor and his superintendent.
  5. Major subcontractors.
  6. Representatives of major suppliers and manufacturers as appropriate.
  7. Governmental and Utilities representatives as appropriate.
  8. Others as requested by the Contractor, Owner, and Engineer.
- D. The Engineer shall preside at the preconstruction meeting. The Engineer shall provide for keeping minutes and distribution of minutes to the Owner and others. The purpose of the preconstruction meeting is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established.
- E. The suggested agenda for the preconstruction meeting would include the following:
1. Distribution and discussion of:
    - a. List of major subcontractors and suppliers.
    - b. Projected schedules.
    - c. Schedule of Values.
  2. Critical work sequencing: Relationships and coordination with other contracts and/or work and continuing sanitary sewer, water distribution and storm water operation.
  3. Major equipment deliveries and priorities.
  4. Project coordination: Designation and responsible personnel.
  5. Procedures and processing of:
    - a. Field decisions.
    - b. Proposal requests.
    - c. Request for Information.
    - d. Submittals.
    - d. Change Orders.
    - f. Applications for Payment.
  6. Submittal of Shop Drawings, project data and samples.
  7. Adequacy of distribution of Contract Documents.
  8. Procedures for maintaining Record Documents
  9. Use of premises:
    - a. Office, work, and storage areas.
    - b. Owner's requirements.
    - c. Access and traffic control.
  10. Construction facilities, controls, and construction aids.
  11. Temporary utilities.
  12. Safety and first aid procedures.

13. Check of required Bond and Insurance certifications.
14. Completion time for contract and liquidated damages.
15. Request for extension of Contract Time.
16. Procedures for periodic monthly (or whatever interval is deemed appropriate or necessary, however, a minimum of monthly meetings will be required) progress meetings, for all involved.
17. Security procedures.
18. Procedures for making partial payments.
19. Guarantees on completed work.
20. Equipment to be used.
21. Project layout and staking of work.
22. Project inspection.
23. Labor requirements.
24. Laboratory testing of material requirements.
25. Provisions for material stored on site and monthly inventory of materials stored.
26. Requirements of other organizations such as utilities, railroads, highway departments, building departments.
27. Rights-of-way and easements.
28. Housekeeping procedures.
29. Liquidated damages.
30. Posting of signs and installation of Project Sign.
31. Pay request submittal dates.
32. Equal opportunity requirements.

### 1.03 PROGRESS MEETINGS

- A. The Engineer shall schedule regular periodic meetings. The progress meetings will be held a minimum of once every thirty (30) days and at other times as required by the progress of the Work. The first meeting shall be held within thirty (30) days after the preconstruction meeting or thirty (30) days or less after the date of Notice to Proceed.
- B. Hold called meetings as required by progress of the Work.
- C. Location of the meetings: at a local site as designated by the Engineer.
- D. Attendance:
  1. Engineer and his professional Sub-consultants as needed.
  2. Resident Project Representative.
  3. Contractor and his Superintendent.
  4. Owner's representatives.
  5. Subcontractors (active on the site, as appropriate to the agenda).
  6. Others as appropriate to the agenda (suppliers, manufacturers, other subcontractors, etc.).
- E. The Engineer shall preside at the meetings and provide for keeping minutes and distribution of the minutes to the Owner and others. The purpose of the meetings

will be to review the progress of the Work.

- F. The suggested agenda for the progress meetings will include but not be limited to the following:
1. Review approval of minutes of previous meeting.
  2. Review of Work progress since previous meeting and Work scheduled (3-week look ahead of schedule).
  3. Field observations, problems, and conflicts.
  4. Problems which impede construction schedule.
  5. Review of off-site fabrication, delivery schedules.
  6. Corrective measures and procedures to regain projected schedule.
  7. Status of approved Construction Schedule and revisions to the Construction Schedule as appropriate.
  8. Progress schedule during succeeding work period.
  9. Coordination of schedules.
  10. Review status of submittals and submittal schedule, expedite as required.
  11. Maintenance of quality standards.
  12. Pending changes and substitutions.
  13. Shop drawing problems.
  14. Review proposed changes for:
    - a. Effect on Construction Schedule and on completion date.
    - b. Effect on other contracts of the Project.
  15. Critical/long lead items.
  16. Other business.
- G. The Contractor is to attend progress meetings and is to study previous meeting minutes and current agenda items, and be prepared to discuss pertinent topics and provide specific information including but not limited to:
1. Status of all submittals and what specifically is being done to expedite them.
  2. Status of all activities behind schedule and what specifically will be done to regain the schedule.
  3. Status of all material deliveries, latest contact with equipment manufacturer, and specific actions taken to expedite materials.
  4. Status of open deficiencies and what is being done to correct the same.
- H. The Contractor is to provide a current submittal log at each progress meeting in accordance with Section 01340: Shop Drawings.

PART 2- PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

01200-4

## SECTION 01300

### LOCATION, SCOPE AND SPECIAL REQUIREMENTS

#### PART 1 - GENERAL

- 1.01 The Contractor shall not have any right in property in any materials taken from any excavation and he shall not remove any earth, sand or other material from the lines of the work before the excavation is refilled except upon direction of the Engineer. The provisions of this paragraph shall not be construed as relieving the Contractor of any kind of his obligations to remove and dispose of any of the material excavated, with or without rehandling, at his cost and expense as provided in these specifications.
- 1.02 From investigations, including surveys made at the site, it is assumed that physical conditions are approximately as indicated on the drawings, but the nature of the materials below the surface, the depth to satisfactory foundations, or the stability of beds or banks or quantity of groundwater are not guaranteed.
- 1.03 Where reference is made within these documents to government specifications, or those of well known organizations such as ASTM, ASA, ASME, etc., the latest editions shall be used, any or all references in these documents to earlier stated editions notwithstanding.
- 1.04 The Contractor shall take all necessary precautions to prevent damage to existing City utilities which are to remain in service during any of his construction operations. Should such utilities be damaged by the Contractor, he shall be required to replace, or repair same, to the satisfaction of the Engineer, at no additional cost to the Owner.
- 1.05 Certain information regarding the reputed presence, size, character, and location of existing underground structure, pipes and conduits has been shown on the contract drawings. The location of underground structures shown may be inaccurate and other obstructions than those shown may be encountered. The Contractor distinctly agrees that the Engineer and the Owner are not responsible for the correctness or sufficiency of the information given; that in no event is this information to be considered as a part of the Contract; that he shall have no claim for delay or extra compensation on account of incorrectness of information given; or on account of insufficiency or absence of information regarding obstructions either revealed or not revealed by the drawings; and that he shall have no claim for relief from any obligation or responsibility under this Contract, in case the location, size or character of any pipe or other underground structure is encountered that is not shown on the drawings.
- 1.06 The Contractor agrees that for each calendar day, with the exception of Sundays and legal holidays, that any such work shall remain uncompleted after the completion time stipulated above, the sum of **Six Hundred Dollars (\$600)** per day shall be deducted by the Owner from monies due the Contractor, not as a penalty but as liquidated damages. **Charges shall accrue upon failure to achieve final completion target date, unless otherwise approved.** If the Contractor is declared in default in accordance with the provisions of the specifications, liquidated damages shall be charged as provided herein, and such amounts shall be deducted

from the final amount payable to the Contractor or his Surety. Should the total amount chargeable as liquidated damages exceed the amount due or payable to the Contractor or his Surety, then such excess shall be paid to the Owner by the Contractor or his Surety.

- 1.07 The City shall provide reference points as shown on the plans. Contractor shall be responsible for having a land surveyor registered in the State of Florida and approved by the Engineer lay out the work, shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of the Engineer. Contractor shall report to Engineer whenever such reference point is lost or destroyed or required location because of necessary changes in grades or locations, and the Contractor shall be responsible for replacement or relocation of such reference points by professionally qualified personnel, registered in the State of Florida and approved by the Engineer.
- 1.08 All dewatering and pumping necessary to accomplish the work of this Contract shall be performed by the Contractor at no extra or additional cost to the Owner. Any permits required shall be the responsibility of the Contractor.
- 1.09 Examination of Contract Documents and Site. Before submitting a Bid each Contractor must (a) examine the Contract Documents thoroughly, (b) visit the site to familiarize himself with local conditions that may in any manner affect cost, progress or performance of the work, (c) familiarize himself with federal, state and local laws, ordinance, rules and regulations that may in any manner affect cost, progress or performance of the work, and (d) study and carefully correlate Bidder's observations with the Contract Documents.
- 1.10 Attention is directed to the requirements of the following agencies with regard to permits and construction of utilities within their rights of way or jurisdiction.
  - A. City of Edgewater
  - B. St. Johns River Water Management District Permit.
  - C. FDOT Drainage Connection Permit
  - D. NPDES Stormwater (by Contractor), if required.
  - E. The Owner will make necessary application for permits to construct such utilities. It shall be, however, the responsibility of the Contractor to construct the utilities in strict accordance with the requirements of the above mentioned agencies, and no extra or additional payments will be made by the Owner for this work.
- 1.11 Construction shall be limited to weekday "day light" working hours. No "weekend", night time", or "holiday" work shall be performed without obtaining permission in advance from the Project Engineer. Certain non-essential items such as clean up, seeding and mulching, sodding, some well pointing operations, saw cutting of pavement, etc. may be performed by the Contractor during the above times by giving the Project Engineer "Advance Notice" (at least 48 hours) of such operations. The Prime Contractor shall establish the normal (40 hours) work week and all subcontractors shall work only during this Anormal (40 hour) work week to allow the Project Engineer's Representative to observe the contract work during this

normal (40 hour) work week. Any weekend, nighttime, or holiday work permitted to be performed by the Contractor shall be by agreement of both the Engineer and the City. Such work shall be performed in the presence of the Engineer's Project Representative, paid for and scheduled at least 48 hours in advance of the activity planned. The fee shall be \$500 per inspector per day or any portion thereof, paid in advance directly to the Engineer. The fee shall only cover the activities the Engineer can reasonably inspect with one person. The Engineer solely reserves the right to determine the number of inspectors required for the number of Contractor's crews working outside of the normal 40 hour work week.

- 1.12 Contract Insurance Requirements. The insurance requirements in Section 00800A represent the minimum insurance requirements for contract with the OWNER.
- 1.13 The Contractor is responsible for recording the Payment and Performance Bond and the Public Construction Bond in the Official Records of Volusia County, Florida. The Contractor shall submit a copy of the bond package to the Engineer *prior to recording*. The Engineer will verify the contract specifics contained on the bonds and submit them to the City Attorney for review and approval. Once approval has been received by the City Attorney, the Engineer will notify the Contractor that the bonds have been approved for recording. The Contractor shall provide copies of the recorded documents and/or the recording receipt from the County Clerk's office to the Engineer prior to the issuance of the "Notice to Proceed". The Contractor shall be responsible for paying all costs associated with the recording of these documents and no separate contract payment shall be made to the Contractor for this item.
- 1.14 The Contractor shall provide an English speaking full time superintendent to supervise sub-contractors and provide direction to field crews. The Engineer's representative shall not be responsible for providing direction to sub-contractor or field crews. The Contractor's superintendent shall not be verbally or physically abusive to citizens or other project personnel. Use of "foul" language in the presence of or belligerence towards citizens or project representatives shall be grounds for immediate replacement of the superintendent at no cost to the owner.
- 1.15 The Contractor acknowledges that he is responsible for complying with all aspects of the Florida Trench Safety Act (90-96, Laws of Fla.) effective October 1, 1990. He assumes all responsibility and costs entailed.
- 1.16 The proposed pipe alignments indicated on the project plans may require adjustment in the field due to conflicts or field conditions. Field changes shall be paid for at the contract unit price.
- 1.17 The Contractor is responsible for obtaining a Water Management District Permit for (dewatering) consumptive use if the Contractor's "means or methods" trip the Agency's thresholds requiring permits. No separate payment or contract time extension for the Contractor obtaining the permit shall be granted by the City.

- 1.18 Land disturbed shall have hay bales or "turbidity curtains" installed around the perimeter to control erosion and sediment runoff where it is likely to occur during construction at no extra cost to the Owner.
- 1.19 The Contractor shall submit an executed "Consent of Surety for Final Payment" form, copy of which is included with the Contract Documents, prior to submitting a final request for payment.
- 1.20 All unit pricing shall remain valid for the duration of the contract.
- 1.21 Florida Sales Tax on materials, as well as all other customary taxes on construction activities, shall be paid for by the Contractor at no additional expense to the Owner.
- 1.22 The Contractor shall provide suitable, accurate pressure gauges for conducting hydrostatic pressure tests at all pipe branch/blow-off locations or as a minimum at each end of each section of the line tested between valves. No separate payment will be made for this work. Payment shall be included in the applicable unit price entitled "Hydrostatic Testing".
- 1.23 No thrust blocking shall be used unless specifically authorized by the Engineer. Restrained joint pipe fittings and joint shall be utilized.
- 1.24 All water main installed under this contract shall be buried with the appropriate marking tape to indicate the service designation. The tape shall be laid directly over the pipe at a depth of 24" below proposed finished ground elevation.
- 1.25 The Contractor shall not sublet, sell, transfer, assign or otherwise dispose of the utility portion thereof, or his right, title or interest therein, without written consent of the Owner.
- 1.26 Limitations on the Engineer's Responsibilities
  - A. Neither the Engineer's authority to act under this Paragraph nor any decision made by him in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of the Engineer to the Contractor, any Subcontractor, any of their agents or employees or any other person performing any of the work.
  - B. The Engineer will not be responsible for the construction means, methods, techniques, sequences or procedures, or the safety precautions and programs incident thereto, and he will not be responsible for the Contractor's failure to perform the work in accordance with the Contract Documents.
  - C. The Engineer will not be responsible for the acts or omissions of the Contractor, any subcontractors, or any of his or their agents or employees, or any other persons performing any of the work.
- 1.27 The City subject to availability will make available reasonable amounts of water for contractor compaction requirements and potable water for flushing and testing requirements

at no cost to the contractor. Abnormally high usage (gross wastage) of provided water by the Contractor's organization shall be subject to City backcharges to the Contractor at established City rates.

- 1.28 All PVC potable water pipe installed under this contract shall be extruded blue in color to differentiate this pipe from other service designations. Pipe shall be NSF approved AWWA C-900 Class 150.
- 1.29 Reasonable care shall be taken during construction to avoid damage to vegetation. Ornamental shrubbery and tree branches shall be temporarily tied back, where appropriate, to minimize damage. Trees which receive damage to branches shall be trimmed of those branches to improve the appearance of the tree. Tree trunks receiving damage from equipment shall be treated with a tree dressing.
- 1.30 Project and completion is defined as pipe materials in place tested and certified for use, and paving and right-of-way restoration complete.
- 1.31 The Contractor's forces shall be required to and dig and expose all existing utilities including telephone cables, T.V. cables (both public and private), gas lines, if present, water mains, force mains, sewer services, water services and private sprinklers a minimum of 24 hours in advance of the pipe laying operation. City forces and other utilities will mark the approximate location of their utilities when contacted. City crew will not be responsible for hand digging the location of City services. Separate lump sum payment shall be made for this work.
- 1.32 All existing improved areas disturbed by construction shall be sodded with the same type sod as the existing variety of sod encountered. Separate unit price payment or lump sum payment will be made for this work.
- 1.33 The Contractor shall utilize restrained joint for bends and required fittings for all pressure pipe shown on the project plans. The restrained PVC pipe lengths shall be in accordance with DIPRA Thrust Resistant Design for Ductile Iron Pipe utilizing laying condition 2 with polyethylene wrap with the type soils and soil depth encountered. Restrained joint pipe specifications shall be strictly adhered to. Piping drawings indicating restraining lengths and calculations shall be submitted to the Engineer for record purposes prior to construction. Responsibility for the adequacy for the restrained joint calculations shall remain with the Contractor and the supplier.
- 1.34 A "City Standard" sign shall be provided as shown in the specifications for each area under construction. The sign shall be placed "in plain view" at a designated location.
- 1.35 The Contractor shall make his own provisions for materials security. Any City provided work areas shall be returned to its original or better condition upon the completion of the project. Sodding of any disturbed areas utilized by the Contractor for work area will be accomplished by the Contractor at no additional cost to the City. Separate payment for this

work will not be made and shall be included in the appropriate contract work items by the Contractor in the bid proposal.

- 1.36 Attached if issued are the project permits the Contractor shall comply with at no additional cost to the Owner.
- 1.37 Burning or burying of land clearing debris shall not be permitted. All organic matter and other debris shall be disposed of by the Contractor at an approved landfill.

END OF SECTION

SECTION 01301  
ATTACHMENTS

PART 1 – GENERAL

1.01 DESCRIPTION

A. The following attachments are hereby made part of the project specifications as fully and completely as if the same were fully set forth herein.

- St. Johns River Water Management District (SJRWMD) Environmental Resource Permit (ERP)
- FDOT Drainage Connection Permit
- City Sign Detail



# St. Johns River Water Management District

Ann B. Shortelle, Ph.D., Executive Director

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4049 Reid Street • P.O. Box 1429 • Palatka, FL 32178-1429 • (386) 329-4500  
On the Internet at [floridaswater.com](http://floridaswater.com).

November 25, 2015

City Of Edgewater  
PO Box 100  
Edgewater, FL 32132-0100

SUBJECT: General Permit 144435-1

Dear Sir/Madam:

The District has received your notice to use a general permit. Based on the submitted information, the proposed activity qualifies for a General Environmental Resource Permit pursuant to section 62-330.447, Florida Administrative Code, provided it is constructed and operated in accordance with that general permit and the general and special conditions set forth in section 62-330.405 and 62-330.447, Florida Administrative Code (attached).

Please be advised that the St. Johns River Water Management District will not publish a notice in the newspaper advising the public that it has determined your project qualifies for this general permit. Newspaper publication, using the District's notice form, notifies members of the public of their right to challenge the use of the general permit. If proper notice is given by newspaper publication, then there is a 21-day time limit for someone to file a petition for an administrative hearing to challenge the use of the permit. To close the point of entry for filing a petition, you may publish (at your own expense) a one-time notice of the District's decision in a newspaper of general circulation within the affected area as defined in Section 50.11 of the *Florida Statutes*. If you do not publish a newspaper notice to close the point of entry, the time to challenge your use of the permit will not expire and someone could file a petition even after your project is constructed.

A copy of the notice form and a partial list of newspapers of general circulation are attached for your convenience. However, you are not limited to those listed newspapers. If you choose to close the point of entry and the notice is published, the newspaper will return to you an affidavit of publication. In that event, it is important that you either submit a scanned copy of the affidavit by emailing it to [compliancesupport@sjrwmd.com](mailto:compliancesupport@sjrwmd.com) (preferred method) or send a copy of the original affidavit to:

Margaret Daniels, Office Director  
Office of Business and Administrative Services  
4049 Reid Street  
Palatka, FL 32177

A copy of your application was transmitted to the U.S. Army Corps of Engineers for review. This authorization to use a general environmental resource permit does not obviate the need for obtaining all necessary permits or approval from other agencies.

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#### GOVERNING BOARD

John A. Miklos, CHAIRMAN  
ORLANDO

Fred N. Roberts Jr., VICE CHAIRMAN  
OCALA

Chuck Drake, SECRETARY  
ORLANDO

Carla Yetter, TREASURER  
FERNANDINA BEACH

Douglas C. Bournique  
VERO BEACH

Douglas Burnett  
ST. AUGUSTINE

Maryam H. Ghyabi  
ORMOND BEACH

Ron Howse  
COCOA

George W. Robbins  
JACKSONVILLE

Sincerely,

A handwritten signature in cursive script that reads "M. Daniels".

Margaret Daniels, Office Director  
Office of Business and Administrative Services

Enclosures: Notice of Rights  
List of Newspapers for Publication

cc: District Permit File

**ST. JOHNS RIVER WATER MANAGEMENT DISTRICT  
GENERAL ENVIRONMENTAL RESOURCE PERMIT**

**PERMIT NO:** 144435-1

**DATE ISSUED:** November 25, 2015

**PROJECT NAME:** Lamont and Hubbell Street Stormwater Improvements

**A PERMIT AUTHORIZING:**

Use of the General Permit to conduct stormwater retrofit activities for the City of Edgewater for the Lamont and Hubbell Street Stormwater Improvements to install approximately 920 LF of exfiltration trench, 700 LF of sodded swales, and a baffle box to be constructed as per plans received by the District on November 13, 2015.

**LOCATION:**

Section(s): 52                      Township(s): 17S                      Range(s): 34E  
Volusia County

**Receiving Water Body:**

Name	Class
Indian River Lagoon	II

**ISSUED TO:**

City Of Edgewater  
PO Box 100  
Edgewater, FL 32132-0100

The District received your notice to use a General Environmental Resource Permit pursuant to Chapter 62-330, Florida Administrative Code (F.A.C.) on October 7, 2014.

Based on the forms, design plans, and other documents submitted with your notice, it appears that the project meets the requirements for a General Environmental Resource Permit. Any activities performed under a General Environmental Resource Permit are subject to the general conditions and special conditions specified in rules 62-330.405 and , F.A.C. respectively (attached). Any deviations from these conditions may subject you to enforcement action and possible penalties.

Please be advised that the General Environmental Resource Permit expires 5 years from the date on which the notice of intent to use a General Environmental Resource Permit was received by the District.

A copy of your notice also has been sent to the U.S. Army Corps of Engineers (USACOE) for review. The USACOE may require a separate permit. Failure to obtain this authorization prior to construction could subject you to enforcement action and possible penalties.

**AUTHORIZED BY:** St. Johns River Water Management District  
Division of Regulatory Engineering and Environmental Services



By:

\_\_\_\_\_  
John Julianna  
Regulatory Coordinator

**"EXHIBIT A"**  
**CONDITIONS FOR ISSUANCE OF PERMIT NUMBER 144435-1**  
**Lamont and Hubbell Street Stormwater Improvements**  
**DATED November 25, 2015**

1. The general permit is valid only for the specific activity indicated. Any deviation from the specified activity and the conditions for undertaking that activity shall constitute a violation of the permit and may subject the permittee to enforcement action and revocation of the permit under Chapter 373, F.S.
2. This general permit does not eliminate the necessity to obtain any required federal, state, local and special district authorizations prior to the start of any construction, alteration, operation, maintenance, removal or abandonment authorized by this permit.
3. This general permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the general permit.
4. The general permit does not relieve the permittee from liability and penalties when the permitted activity causes harm or injury to: human health or welfare; animal, plant or aquatic life; or property. It does not allow the permittee to cause pollution that violates state water quality standards.
5. Section 253.77, F.S., provides that a person may not commence any excavation, construction, or other activity involving the use of state-owned or other lands of the state, the title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund without obtaining the required consent, lease, easement, or other form of authorization authorizing the proposed use. Therefore, the permittee is responsible for obtaining any necessary authorizations from the Board of Trustees prior to commencing activity on state-owned lands.
6. The authorization to conduct activities under a general permit may be modified, suspended or revoked in accordance with Chapter 120, F.S., and Section 373.429, F.S.
7. This permit shall not be transferred to a third party except pursuant to Rule 62-330.340, F.A.C. The permittee transferring the general permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to sale, conveyance, or other transfer of ownership or control of the permitted project, activity, or the real property at which the permitted project or activity is located.
8. Upon reasonable notice to the permittee, Agency staff with proper identification shall have permission to enter, inspect, sample and test the permitted system to ensure conformity with the plans and specifications approved by the permit.
9. The permittee shall maintain any permitted project or activity in accordance with the plans submitted to the Agency and authorized in this general permit.
10. A permittee's right to conduct a specific activity under this general permit is authorized for a duration of five years.
11. Activities shall be conducted in a manner that does not cause or contribute to violations of state water quality standards. Performance-based erosion and sediment control best

management practices shall be implemented and maintained immediately prior to, during, and after construction as needed to stabilize all disturbed areas, including other measures specified in the permit to prevent adverse impacts to the water resources and adjacent lands. Erosion and sediment control measures shall be installed and maintained in accordance with the State of Florida Erosion and Sediment Control Designer and Reviewer Manual (Florida Department of Environmental Protection and Florida Department of Transportation June 2007), available at [www.dep.state.fl.us/water/wetlands/docs/erp/FLERosionSedimentManual\\_6\\_07.pdf](http://www.dep.state.fl.us/water/wetlands/docs/erp/FLERosionSedimentManual_6_07.pdf), and the Florida Stormwater Erosion and Sedimentation Control Inspector's Manual (Florida Department of Environmental Protection, Nonpoint Source Management Section, Tallahassee, Florida, July 2008), available at [www.dep.state.fl.us/water/nonpoint/docs/erosion/erosion-inspectors-manual.pdf](http://www.dep.state.fl.us/water/nonpoint/docs/erosion/erosion-inspectors-manual.pdf).

12. Unless otherwise specified in the general permit, temporary vehicular access within wetlands during construction shall be performed using vehicles generating minimum ground pressure to minimize rutting and other environmental impacts. Within forested wetlands, the permittee shall choose alignments that minimize the destruction of mature wetland trees to the greatest extent practicable. When needed to prevent rutting or soil compaction, access vehicles shall be operated on wooden, composite, metal, or other non-earthen construction mats. In all cases, access in wetlands shall comply with the following:
  - (a) Access within forested wetlands shall not include the cutting or clearing of any native wetland tree having a diameter 4 inches or greater at breast height;
  - (b) The maximum width of the construction access area shall be limited to 15 feet;
  - (c) All mats shall be removed within 72 hours after the work commences; and
  - (d) Areas disturbed for access shall be restored to natural grades immediately after the maintenance or repair is completed.
13. Barges or other work vessels used to conduct in-water activities shall be operated in a manner that prevents unauthorized dredging, water quality violations, and damage to submerged aquatic communities.
14. The construction, alteration, or use of the authorized project shall not adversely impede navigation or create a navigational hazard in the water body.
15. Except where specifically authorized in a general permit, activities must not:
  - (a) Impound or obstruct existing water flow, cause adverse impacts to existing surface water storage and conveyance capabilities, or otherwise cause adverse water quantity or flooding impacts to receiving water and adjacent lands;
  - (b) Cause an adverse impact to the maintenance of surface or ground water levels or surface water flows established pursuant to Section 373.042, F.S., or a Works of the District established pursuant to Section 373.086, F.S.; or
16. If any prehistoric or historic artifacts, such as pottery or ceramics, stone tools or metal implements, dugout canoes, or any other physical remains that could be associated with Native American cultures, or early colonial or American settlement are encountered at any time within the project site area, work involving subsurface disturbance in the immediate vicinity of such discoveries shall cease. The permittee or other designee shall contact the Florida Department of State, Division of Historical Resources, Compliance and Review Section, at (850) 245-6333 or (800) 847-7278, as well as the appropriate permitting agency office. Such subsurface work shall not resume without verbal or written authorization from the Division of Historical Resources. If unmarked human remains are encountered, all work shall stop immediately and notification shall be provided in accordance with Section 872.05, F.S.

17. The activity must be capable, based on generally accepted engineering and scientific principles, of being performed and of functioning as proposed, and must comply with any applicable District special basin and geographic area criteria.
18. The permittee shall comply with the following when performing work within waters accessible to federally- or state-listed aquatic species, such as manatees, marine turtles, smalltooth sawfish, and Gulf sturgeon:
  - (a) All vessels associated with the project shall operate at "Idle Speed/No Wake" at all times while in the work area and where the draft of the vessels provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.
  - (b) All deployed siltation or turbidity barriers shall be properly secured, monitored, and maintained to prevent entanglement or entrapment of listed species.
  - (c) All in-water activities, including vessel operation, must be shutdown if a listed species comes within 50 feet of the work area. Activities shall not resume until the animal(s) has moved beyond a 50-foot radius of the in-water work, or until 30 minutes elapses since the last sighting within 50 feet. Animals must not be herded away or harassed into leaving. All on-site project personnel are responsible for observing water-related activities for the presence of listed species.
  - (d) Any listed species that is killed or injured by work associated with activities performed shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1(888)404-3922 and [ImperiledSpecies@myFWC.com](mailto:ImperiledSpecies@myFWC.com).
  - (e) Whenever there is a spill or frac-out of drilling fluid into waters accessible to the above species during a directional drilling operation, the FWC shall be notified at [imperiledspecies@myfwc.com](mailto:imperiledspecies@myfwc.com) with details of the event within 24 hours following detection of the spill or frac-out.
19. The permittee shall hold and save the Agency harmless from any and all damages, claims, or liabilities which may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any activity authorized by the general permit.
20. The permittee shall immediately notify the Agency in writing of any submitted information that is discovered to be inaccurate.
21. Within 30 days after completion of construction, a registered professional shall submit certification that construction was completed in substantial conformance with the plans and calculations that were submitted in the notice to use this general permit.

## Notice of Rights

1. A person whose substantial interests are or may be affected has the right to request an administrative hearing by filing a written petition with the St. Johns River Water Management District (District). Pursuant to Chapter 28-106 and Rule 40C-1.1007, Florida Administrative Code, the petition must be filed (received) either by delivery at the office of the District Clerk at District Headquarters, P. O. Box 1429, Palatka Florida 32178-1429 (4049 Reid St., Palatka, FL 32177) or by e-mail with the District Clerk at [Clerk@sjrwmd.com](mailto:Clerk@sjrwmd.com), within twenty-six (26) days of the District depositing the notice of District decision in the mail (for those persons to whom the District mails actual notice), within twenty-one (21) days of the District emailing the notice of District decision (for those persons to whom the District emails actual notice), or within twenty-one (21) days of newspaper publication of the notice of District decision (for those persons to whom the District does not mail or email actual notice). A petition must comply with Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes, and Chapter 28-106, Florida Administrative Code. The District will not accept a petition sent by facsimile (fax), as explained in paragraph no. 4 below.
2. Please be advised that if you wish to dispute this District decision, mediation may be available and that choosing mediation does not affect your right to an administrative hearing. If you wish to request mediation, you must do so in a timely-filed petition. If all parties, including the District, agree to the details of the mediation procedure, in writing, within 10 days after the time period stated in the announcement for election of an administrative remedy under Sections 120.569 and 120.57, Florida Statutes, the time limitations imposed by Sections 120.569 and 120.57, Florida Statutes, shall be tolled to allow mediation of the disputed District decision. The mediation must be concluded within 60 days of the date of the parties' written agreement, or such other timeframe agreed to by the parties in writing. Any mediation agreement must include provisions for selecting a mediator, a statement that each party shall be responsible for paying its pro-rata share of the costs and fees associated with mediation, and the mediating parties' understanding regarding the confidentiality of discussions and documents introduced during mediation. If mediation results in settlement of the administrative dispute, the District will enter a final order consistent with the settlement agreement. If mediation terminates without settlement of the dispute, the District will notify all the parties in writing that the administrative hearing process under Sections 120.569 and 120.57, Florida Statutes, is resumed. Even if a party chooses not to engage in formal mediation, or if formal mediation does not result in a settlement agreement, the District will remain willing to engage in informal settlement discussions.
3. A person whose substantial interests are or may be affected has the right to an informal administrative hearing pursuant to Sections 120.569 and 120.57(2), Florida Statutes, where no material facts are in dispute. A petition for an informal hearing must also comply with the requirements set forth in Rule 28-106.301, Florida Administrative Code.

## Notice of Rights

4. A petition for an administrative hearing is deemed filed upon receipt of the complete petition by the District Clerk at the District Headquarters in Palatka, Florida during the District's regular business hours. The District's regular business hours are 8:00 a.m. – 5:00 p.m., excluding weekends and District holidays. Petitions received by the District Clerk after the District's regular business hours shall be deemed filed as of 8:00 a.m. on the District's next regular business day. The District's acceptance of petitions filed by e-mail is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation (issued pursuant to Rule 28-101.001, Florida Administrative Code), which is available for viewing at [floridaswater.com](http://floridaswater.com). These conditions include, but are not limited to, the petition being in the form of a PDF or TIFF file and being capable of being stored and printed by the District. Further, pursuant to the District's Statement of Agency Organization and Operation, attempting to file a petition by facsimile is prohibited and shall not constitute filing.
5. Failure to file a petition for an administrative hearing within the requisite timeframe shall constitute a waiver of the right to an administrative hearing. (Rule 28-106.111, Florida Administrative Code).
6. The right to an administrative hearing and the relevant procedures to be followed are governed by Chapter 120, Florida Statutes, Chapter 28-106, Florida Administrative Code, and Rule 40C-1.1007, Florida Administrative Code. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means the District's final action may be different from the position taken by it in this notice. A person whose substantial interests are or may be affected by the District's final action has the right to become a party to the proceeding, in accordance with the requirements set forth above.
7. Pursuant to Section 120.68, Florida Statutes, a party to the proceeding before the District who is adversely affected by final District action may seek review of the action in the District Court of Appeal by filing a notice of appeal pursuant to Rules 9.110 and 9.190, Florida Rules of Appellate Procedure, within 30 days of the rendering of the final District action.
8. A District action is considered rendered, as referred to in paragraph no. 7 above, after it is signed on behalf of the District and filed by the District Clerk.
9. Failure to observe the relevant timeframes for filing a petition for judicial review as described in paragraph no. 7 above will result in waiver of that right to review.

**Notice of Rights**

**Certificate of Service**

I HEREBY CERTIFY that a copy of the foregoing Notice of Rights has been sent to the permittee:

City Of Edgewater  
PO Box 100  
Edgewater, FL 32132-0100

This 25th day of November, 2015.



Margaret Daniels, Office Director  
Office of Business and Administrative Services  
St. Johns River Water Management District  
4049 Reid Street  
Palatka, FL 32177-2529  
(386) 329-4570

Permit Number: 144435-1

## NOTICING INFORMATION

Dear Permittee:

Please be advised that the St. Johns River Water Management District will not publish a notice in the newspaper advising the public that it has issued a permit for this project.

Newspaper publication, using the District's notice form, notifies members of the public of their right to challenge the issuance of the permit. If proper notice is given by newspaper publication, then there is a 21-day time limit for someone to file a petition for an administrative hearing to challenge the issuance of the permit.

To close the point of entry for filing a petition, you may publish (at your own expense) a one-time notice of the District's decision in a newspaper of general circulation within the affected area as defined in Section 50.011 of the Florida Statutes. If you do not publish a newspaper notice to close the point of entry, the time to challenge the issuance of your permit will not expire and someone could file a petition even after your project is constructed.

A copy of the notice form and a partial list of newspapers of general circulation are attached for your convenience. However, you are not limited to those listed newspapers. If you choose to close the point of entry and the notice is published, the newspaper will return to you an affidavit of publication. In that event, it is important that you either submit a scanned copy of the affidavit by emailing it to [compliancesupport@sjrwmd.com](mailto:compliancesupport@sjrwmd.com) (preferred method) or send a copy of the original affidavit to:

Margaret Daniels, Office Director  
Office of Business and Administrative Services  
4049 Reid Street  
Palatka, FL 32177

If you have any questions, please contact the Bureau of Regulatory Support at (386) 329-4570.

Sincerely,



Margaret Daniels, Office Director  
Office of Business and Administrative Services

NOTICE OF AGENCY ACTION TAKEN BY THE  
ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

Notice is given that the following permit was issued on \_\_\_\_\_:

(Name and address of applicant) \_\_\_\_\_  
permit# \_\_\_\_\_. The project is located in \_\_\_\_\_ County, Section  
\_\_\_\_\_, Township \_\_\_\_\_ South, Range \_\_\_\_\_ East. The permit authorizes a surface  
water management system on \_\_\_\_\_ acres for  
\_\_\_\_\_ known as  
\_\_\_\_\_. The receiving water body is \_\_\_\_\_.

A person whose substantial interests are or may be affected has the right to request an administrative hearing by filing a written petition with the St. Johns River Water Management District (District). Pursuant to Chapter 28-106 and Rule 40C-1.1007, Florida Administrative Code (F.A.C.), the petition must be filed (received) either by delivery at the office of the District Clerk at District Headquarters, P.O. Box 1429, Palatka FL 32178-1429 (4049 Reid St, Palatka, FL 32177) or by e-mail with the District Clerk at Clerk@sjrwmd.com, within twenty-one (21) days of newspaper publication of the notice of District decision (for those persons to whom the District does not mail or email actual notice). A petition must comply with Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes (F.S.), and Chapter 28-106, F.A.C. The District will not accept a petition sent by facsimile (fax). Mediation pursuant to Section 120.573, F.S., may be available and choosing mediation does not affect your right to an administrative hearing.

A petition for an administrative hearing is deemed filed upon receipt of the complete petition by the District Clerk at the District Headquarters in Palatka, Florida during the District's regular business hours. The District's regular business hours are 8 a.m. – 5 p.m., excluding weekends and District holidays. Petitions received by the District Clerk after the District's regular business hours shall be deemed filed as of 8 a.m. on the District's next regular business day. The District's acceptance of petitions filed by e-mail is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation (issued pursuant to Rule 28-101.001, Florida Administrative Code), which is available for viewing at [floridaswater.com](http://floridaswater.com). These conditions include, but are not limited to, the petition being in the form of a PDF or TIFF file and being capable of being stored and printed by the District. Further, pursuant to the District's Statement of Agency Organization and Operation, attempting to file a petition by facsimile (fax) is prohibited and shall not constitute filing.

The right to an administrative hearing and the relevant procedures to be followed are governed by Chapter 120, Florida Statutes, Chapter 28-106, Florida Administrative Code, and Rule 40C-1.1007, Florida Administrative Code. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means the District's final action may be different from the position taken by it in this notice. **Failure to file a petition for an administrative hearing within the requisite time frame shall constitute a waiver of the right to an administrative hearing. (Rule 28-106.111, F.A.C.).**

If you wish to do so, please visit [http://floridaswater.com/nor\\_dec/](http://floridaswater.com/nor_dec/) to read the complete Notice of Rights to determine any legal rights you may have concerning the District's decision(s) on the permit application(s) described above. You can also request the Notice of Rights by contacting the Director of Regulatory Support, 4049 Reid St., Palatka, FL 32177-2529, tele. no. (386)329-4570.

## **NEWSPAPER ADVERTISING**

### **ALACHUA**

The Alachua County Record, Legal Advertising  
P. O. Box 806  
Gainesville, FL 32602  
352-377-2444/ fax 352-338-1986

### **BRAFORD**

Bradford County Telegraph, Legal Advertising  
P. O. Drawer A  
Starke, FL 32901  
904-964-6305/ fax 904-964-8628

### **CLAY**

Clay Today, Legal Advertising  
1560 Kinsley Ave., Suite 1  
Orange Park, FL 32073  
904-264-3200/ fax 904-264-3285

### **FLAGLER**

Flagler Tribune, c/o News Journal  
P. O. Box 2831  
Daytona Beach, FL 32120-2831  
386-681-2322

### **LAKE**

Daily Commercial, Legal Advertising  
P. O. Drawer 490007  
Leesburg, FL 34749  
352-365-8235/fax 352-365-1951

### **NASSAU**

News-Leader, Legal Advertising  
P. O. Box 766  
Fernandina Beach, FL 32035  
904-261-3696/fax 904-261-3698

### **ORANGE**

Sentinel Communications, Legal Advertising  
633 N. Orange Avenue  
Orlando, FL 32801  
407-420-5160/ fax 407-420-5011

### **PUTNAM**

Palatka Daily News, Legal Advertising  
P. O. Box 777  
Palatka, FL 32178  
386-312-5200/ fax 386-312-5209

### **SEMINOLE**

Seminole Herald, Legal Advertising  
300 North French Avenue  
Sanford, FL 32771  
407-323-9408

### **BAKER**

Baker County Press, Legal Advertising  
P. O. Box 598  
Maclenny, FL 32063  
904-259-2400/ fax 904-259-6502

### **BREVARD**

Florida Today, Legal Advertising  
P. O. Box 419000  
Melbourne, FL 32941-9000  
321-242-3832/ fax 321-242-6618

### **DUVAL**

Daily Record, Legal Advertising  
P. O. Box 1769  
Jacksonville, FL 32201  
904-356-2466 / fax 904-353-2628

### **INDIAN RIVER**

Vero Beach Press Journal, Legal Advertising  
P. O. Box 1268  
Vero Beach, FL 32961-1268  
772-221-4282/ fax 772-978-2340

### **MARION**

Ocala Star Banner, Legal Advertising  
2121 SW 19th Avenue Road  
Ocala, FL 34474  
352-867-4010/fax 352-867-4126

### **OKEECHOBEE**

Okeechobee News, Legal Advertising  
P. O. Box 639  
Okeechobee, FL 34973-0639  
863-763-3134/fax 863-763-5901

### **OSCEOLA**

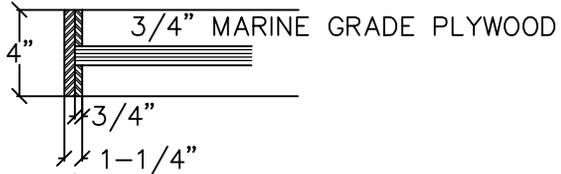
Little Sentinel, Legal Advertising  
633 N. Orange Avenue  
Orlando, FL 32801  
407-420-5160/ fax 407-420-5011

### **ST. JOHNS**

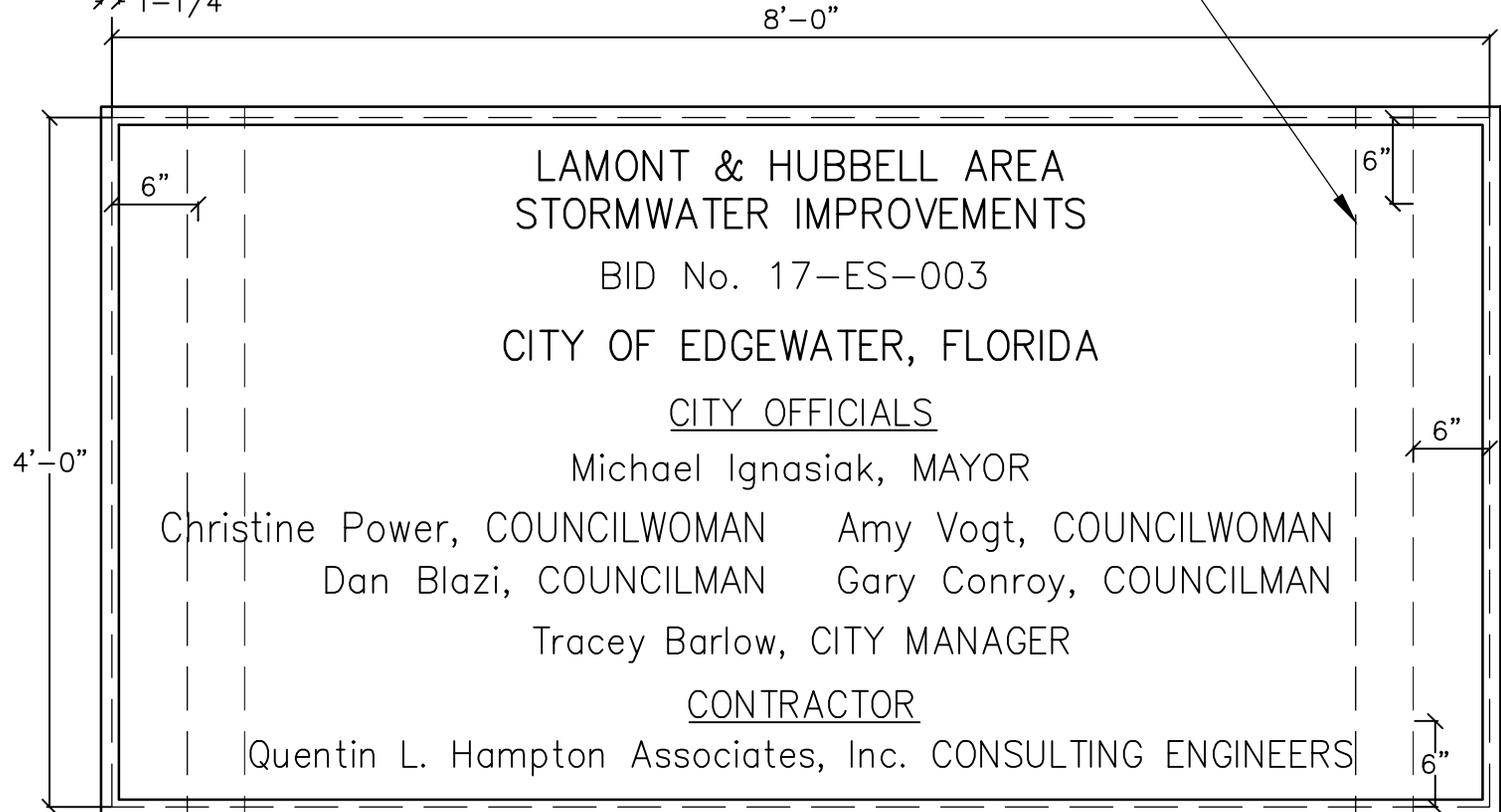
St. Augustine Record, Legal Advertising  
P. O. Box 1630  
St. Augustine, FL 32085  
904-819-3436

### **VOLUSIA**

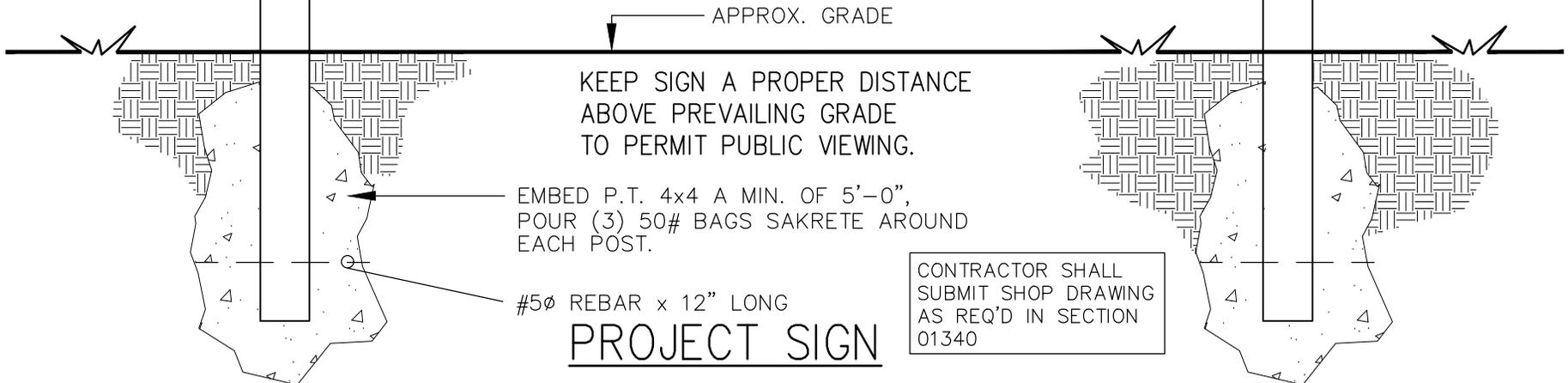
News Journal Corporation, Legal Advertising  
P. O. Box 2831  
Daytona Beach, FL 32120-2831  
(386) 681-2322



P.T. 4x4 POSTS x 12'-0" LONG. SECURE TO PROJECT SIGN USING 1/2" DIA. x 6" LONG GALV. CARRIAGE BOLTS W/ 2" FENDER WASHERS EACH SIDE (4) REQUIRED EACH POST.



Minimum 24"  
Above Grade &  
Clear of Visual  
Obstructions



## SECTION 01310

### CONSTRUCTION PROGRESS SCHEDULES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. Scope of Work:

1. Promptly after award of the Contract, prepare and submit to the Engineer estimated construction progress schedules demonstrating complete fulfillment of all Contract requirements utilizing a Critical Path Method (hereinafter referred to as CPM) in planning, coordinating, and performing the Work under this Contract (including all activities of subcontractors, equipment vendors, and suppliers). The principles and definition of CPM terms used herein shall be as set forth in the Associated General Contractors of America (AGC) publication, The Use of CPM in Construction, A Manual for General Contractors and the Construction Industry, latest edition, but the provisions of this Specification shall govern the planning, coordinating, and performance of the Work.
2. Submit revised progress schedules on a monthly basis. No partial payments shall be approved until there is an approved construction progress schedule on hand.

###### B. Related Requirements Described Elsewhere:

1. Conditions of the Contract.
2. Summary of Project: Section 01010.
3. Project Meetings: Section 01200.
4. Application for Payment: Section 01027
5. Shop Drawings: Section 01340.
6. Schedule of Values: Section 01370.

##### 1.02 QUALIFICATIONS

- ###### A.
- A statement of computerized CPM capability shall be submitted in writing prior to the award of the Contract and shall verify that either Contractor's organization has in-house capability to use the CPM technique or that Contractor will employ a CPM consultant who is so qualified.

- B. In-house capability shall be verified by description of construction projects to which Contractor or Contractor's consultant has successfully applied computerized CPM and shall include at least two (2) projects valued at least half the expected value of this project.

### 1.03 FORM OF SCHEDULES

- A. Prepare schedules in the form of a horizontal bar chart.
  - 1. Provide a separate horizontal bar for each trade or operation within each structure or item.
  - 2. Horizontal time scale:
    - a. Show starting and completion dates for each activity in terms of the number of days after Notice to Proceed. All completion dates shown shall be within the period specified for contract completion.
    - b. Identify the first work day of each month.
  - 3. Scale and Spacing: Sufficient to allow space for notations and future revisions.
  - 4. Maximum Sheet Size: 24 inches by 36 inches.
- B. Format of Listings: The chronological order of the start of each item of work for each structure.
- C. Identification of Listings: By major specification section numbers as applicable and by utility.
- D. Construction Progress Schedules shall be computer generated using software equal to Primavera Project Planner for Windows by Primavera Systems, Inc., Bala Cynwyd, P.A., or approved equal.

### 1.04 CONTENT OF SCHEDULES

- A. Construction Progress Schedule:
  - 1. Show the complete sequence of construction by activity and by structure.
  - 2. Show the dates for the beginning and completion of each major element of construction in no more than a two (2) week increment scale. Specifically list, but do not limit to:
    - a. Shop Drawing Schedule.
    - b. Installation of temporary facilities.
    - c. Clearing.
    - d. Demolition

- e. Subcontractor work
  - f. Utility Installations
  - g. Paving
  - h. Start-Up
  - i. Project closeout
- 3. Show projected percentage of completion for each item, as of the first day of each month.
- 4. Show projected dollar cash flow requirements for each month of construction and for each activity as indicated by the approved Schedule of Values.
- B. Submittals for construction progress schedules shall be in accordance with Section 01340: Shop Drawings. Indicate on the schedule the following:
  - 1. The dates for Contractor's submittals.
  - 2. The date submittals will be required for Owner-furnished products, if applicable.
  - 3. The date approved submittals will be required from the Engineer.
- C. A typewritten list of all long lead items (equipment, materials, etc.).
- D. To the extent that the progress schedule or any revised progress schedule shows anything not jointly agreed upon or fails to show anything jointly agreed upon, it shall not be deemed to have been approved by the Engineer. Failure to include any element of work required for the performance of this Contract shall not excuse the Contractor from completing all work required within any applicable completion date, notwithstanding the Engineer's approval of the progress schedule.
- E. Scheduling Constraints: The work within Owner's property must be completed within the maximum number of days start to finish, as indicated in the Contract. Additionally, work must proceed on a continuous basis, without stoppages, except for nights and weekends. There shall be no lapses between phases of construction.

#### 1.05 PROGRESS REVISIONS

- A. Indicate progress of each activity to date of submission.
- B. Show changes occurring since previous submission of schedule:
  - 1. Major changes in scope.
  - 2. Activities modified since previous submission.
  - 3. Revised projections of progress and completion.
  - 4. Other identifiable changes.

- C. Provide a narrative report as needed to define:
  - 1. Problem areas, anticipated delays, and the impact on the schedule.
  - 2. Corrective action recommended, and its effect.
  - 3. The effect of changes on schedules of other prime contractors.
- D. If the Work falls behind the critical path schedule by two (2) weeks or more, the Contractor shall prepare a recovery schedule.

## 1.06 SUBMISSIONS

- A. Submittal Requirements.
  - 1. Logic network and/or time-phased bar chart, computer generated.
  - 2. Computerized network analysis:
    - a. Sort by early start
    - b. Sort by float
    - c. Sort by predecessor/successor
  - 3. Narrative description of the logic and reasoning of the schedule.

- B. Time of Submittals.

Within ten (10) working days after Notice to Proceed, Contractor shall submit a network diagram describing the activities to be accomplished in the project and their dependency relationships, (predecessor/successor) as well as a tabulated schedule as herein defined. The total length of time indicated on the initial CPM schedule shall equal the exact number of days in the Contract Time as defined in Section 00500: Agreement. The schedule produced and submitted shall also indicate calendar dates, including project starting and completion dates, based on the Contract Commencement and completion dates indicated in the Notice to Proceed. The Engineer will complete the review of the complete schedule within fifteen (15) working days after receipt. During the review process, the Engineer may meet with a representative of Contractor to review the proposed plan and schedule to discuss any clarifications that may be necessary.

- C. Within ten (10) working days after the conclusion of the Engineer's review period, Contractor shall revise the network diagram as required and resubmit the network diagram and a tabulated schedule produced therefrom. The revised network diagram and tabulated schedule shall be reviewed and accepted or rejected by the Engineer within fifteen (15) working days after receipt. The network diagram and tabulated schedule, when accepted by the Engineer, shall constitute the project work schedule

unless a revised schedule is required due to substantial changes in the Work, a change in Contract Time or a recovery schedule is required and requested.

- D. Acceptance. The finalized schedule will be acceptable to the Engineer when, in the opinion of the Engineer, it demonstrates an orderly progression of the Work to completion in accordance with the Contract Documents. Such acceptance will neither impose on the Engineer responsibility for the progress or scheduling of the Work nor relieve Contractor from full responsibility therefore. The finalized schedule of shop drawing submittals will be acceptable to the Engineer when, in the opinion of the Engineer, it demonstrates a workable arrangement for processing the submittals in accordance with the requirements. The finalized Schedule of Values (lump sum price breakdown), as applicable, will be acceptable to the Engineer as to form and content when, in the opinion of the Engineer, it demonstrates a substantial basis for equitably distributing the Contract Price. When the network diagram and tabulated schedule have been accepted, the Contractor shall submit to the Engineer six (6) copies of the time-scaled network diagram, six (6) copies of a computerized tabulated schedule in which the activities have been sequenced by numbers, six (6) copies of a computerized tabulated schedule in which the activities have been sequenced by early starting date, and six (6) copies of a computerized, tabulated schedule in which activities have been sequenced by total float, and six (6) copies sorted by predecessor/successor.
- E. Revised Work Schedules. Contractor, if requested by the Engineer, shall provide a revised work schedule if, at any time, the Engineer considers the completion date to be in jeopardy because of "activities behind schedule." The revised work schedule shall include a new diagram and tabulated schedule conforming to the requirements of Paragraph 1.09 herein, designed to show how Contractor intends to accomplish the Work to meet the completion date. The form and method employed by Contractor shall be the same as for the original work schedule. No payment will be made if activities fall more than two (2) weeks behind schedule and a revised work schedule is not furnished.
- F. Schedule Revisions. The Engineer may require Contractor to modify any portions of the work schedule that become infeasible because of "activities behind schedule" or for any other valid reason. An activity that cannot be completed by its original latest completion date shall be deemed to be behind schedule. No change may be made to the sequence, duration, or relationships of any activity without approval of the Engineer.

#### 1.07 DISTRIBUTION

- A. Distribute copies of the reviewed schedules to:
  - 1. Engineer.

2. Jobsite file.
3. Subcontractors.
4. Other concerned parties.
5. Owner (two copies).

B. Instruct recipients to report promptly to the Contractor, in writing, any problems anticipated by the projections shown in the schedules.

#### 1.08 CHANGE ORDERS

A. Upon approval of a change order, the approved changes shall be reflected in the next scheduled revision or update submittal of the construction progress schedule by the Contractor.

#### 1.09 CPM STANDARDS

A. CPM, as required by this Section, shall be interpreted to be generally as outlined in the Associated General Contractors (AGC) publication, The Use of CPM in Construction, A Manual for General Contractors and the Construction Industry, Copyright 1976.

B. Work schedules shall include a graphic network and computerized, tabulated schedules as described below. To be acceptable the schedule must demonstrate the following:

1. A logical succession of work from start to finish.
2. Definition of each activity. Activities shall be identified by major specification section numbers, as applicable, and by major utility.
3. A logical flow of work crews/equipment (crews are to be defined by manpower category and man-hours; equipment by type and hours).
4. Show all work activities and interfaces including submittals as well as major material and equipment deliveries.

C. Networks.

1. The CPM network, or diagram, shall be in the form of a time-scaled diagram of the customary activity-on-type and may be divided into a number of separate pages with suitable notation relating the interface points among the pages. Notation on each activity line shall include a brief work description and duration, as described in Paragraph 1.09, D. herein.

2. All construction activities and procurement shall be indicated in a time-scaled format, and a calendar shall be shown on all sheets along the entire sheet length. Each activity arrow shall be plotted so the beginning and completion dates of said activity can be determined graphically by comparison with the calendar scale. All activities shall be shown using the symbols that clearly distinguish between critical path activities, non-critical path activities, and float for each non-critical activity. All non-critical path activities shall show estimated performances time and float time in scaled form.
- D. The duration indicated for each activity shall be in calendar days and shall represent the single best time considering the scope of the work and resources planned for the activity including time for inclement weather. Except for certain non-labor activities, such as curing concrete or delivering materials, activity durations shall not exceed fourteen (14) days nor be less than one (1) day unless otherwise accepted by the Engineer.
- E. Tabulated Schedules. The initial schedule shall include the following minimum data for each activity.
1. Activity Beginning and Ending Numbers (i-j numbers) (single activity numbers may be used).
  2. Duration.
  3. Activity Description.
  4. Early Start Date (Calendar Dated).
  5. Late Start Date (Calendar Dated).
  6. Early Finish Date (Calendar Dated).
  7. Late Finish Date (Calendar Dated).
  8. Identified Critical Path.
  9. Total Float (Note: No activity may show more than 20 days float).
  10. Cost of Activity.
  11. Equipment Hours, by type; Man-Power Hours, by crew or trade.
- F. Project Information. Each tabulation shall be prefaced with the following summary data:
1. Project Name.
  2. Contractor.
  3. Type of Tabulation (Initial or Updated).
  4. Project Duration.
  5. Project Scheduled Completion Date.
  6. Effective or Starting Date of the Schedule.
  7. New Project Completion Date and Project Status (if an updated or revised schedule).

8. Actual Start Date and Actual Finish Date (for all updated schedules.)

#### 1.10 SCHEDULE MONITORING

- A. At not less than monthly intervals or when specifically requested by Engineer, Contractor shall submit to the Engineer a computer printout of an updated schedule for those activities that remain to be completed. Typically, the updated schedule will be submitted with the application for payment as specified below.
- B. The updated schedule shall be submitted in the form, sequence, and number of copies requested for the initial schedule.

#### 1.11 PROGRESS MEETINGS

- A. For the monthly progress meeting, Contractor shall submit a revised CPM schedule and a three-week look-ahead schedule, showing all activities completed, in progress, uncompleted, or scheduled to be worked during the weeks. The three weeks include the current week plus the next two weeks. All activities shall be from the approved CPM and must be as shown on the CPM unless behind or ahead of schedule. One copy of the revised CPM schedule shall be submitted with each copy of that month's application for payment, six (6) copies minimum.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01340

### SHOP DRAWINGS

#### PART 1 - GENERAL

##### 1.01 REQUIREMENTS INCLUDED

- A. The Contractor shall submit to the Engineer for review and approval, such working drawings, shop drawings, test reports and data on materials and equipment, and material samples materials list, certificates and affidavits as are required for the proper control of work, including but not limited to those working drawings, shop drawings, data and samples for materials and equipment specified elsewhere in the Specifications and in the Contract Drawings.
- B. Within twenty (20) calendar days after the Effective Date of the Agreement, the Contractor shall submit to the Engineer a complete materials list of preliminary data on items for which Shop Drawings are to be submitted. Included in this materials list shall be the names of all proposed manufacturers furnishing specified items. Review of this list by the Engineer shall in no way be expressed or implied relief to the Contractor from submitting complete Shop Drawings and providing material, equipment, etc., fully in accordance with the Specifications. This procedure is required in order to expedite final review of Shop Drawings.
- C. The Contractor shall maintain an accurate updated submittal log and will bring this log to each scheduled progress meeting with the Owner and the Engineer. This log shall include the following items:
  - 1. Submittal-Description and Number assigned.
  - 2. Date to Engineer
  - 3. Date returned to Contractor (from Engineer).
  - 4. Status of Submittal (Approved, Approved as Noted, Not Approved/Resubmit).
  - 5. Date of Re submittal and Return (as applicable).
  - 6. Date material release (for fabrication).
  - 7. Projected date of fabrication.
  - 8. Projected date of delivery to site.
  - 9. Status of O&M manuals submitted.

10. Specification Section.
11. Drawings Sheet Number.

## 1.02 CONTRACTOR'S RESPONSIBILITY

- A. It is the duty of the Contractor to check all drawings, data and samples prepared by or for him before submitting them to the Engineer for review. Each and every copy of the drawings and data shall bear Contractor's stamp and signature showing that they have been so checked. Shop drawings submitted to the Engineer without the Contractor's stamp and signature will be returned to the Contractor for conformance with this requirement. Shop drawings shall indicate any deviations in the submittal from requirements of the Contract Documents. If the Contractor takes exception to the specifications, the Contractor shall note the exception in the letter of transmittal to the Engineer. Shop drawings submittals shall not be used as a vehicle for requesting approval of substitute or alternative equipment and materials. Substitution requests will be considered only when submitted in accordance with the applicable provisions of Section 01600.
- B. Determine and Verify:
  1. Field measurements
  2. Field construction criteria
  3. Catalog numbers and similar data
  4. Conformance with Specifications
- C. The Contractor shall furnish the Engineer a schedule of Shop Drawings submittals fixing the respective dates for the submission of shop and working drawings, the beginning of manufacture, testing and installation of materials, supplies and equipment. This schedule shall indicate those that are critical to the progress schedule.
- D. The Contractor shall not begin any of the work covered by a drawing, data, or a sample returned for correction until a revision or correction thereof has been reviewed and returned to him, by the Engineer, with approval.
- E. The Contractor shall submit to the Engineer all drawings and schedules sufficiently in advance of construction requirements to provide no less than thirty (30) calendar days for checking and appropriate action from the time the Engineer receives them.
- F. All submittals shall be accompanied by a transmittal letter prepared in duplicate containing the following information:
  1. Date
  2. Project Title and Number

3. Contractor's name and address
  4. The number of each Shop Drawing, Product Data, and Sample submitted
  5. Notification of deviations from Contract Documents
  6. Submittal Log Number conforming to Specification Section Numbers.
- G. The Contractor shall submit five (5) copies of descriptive or product data submittals/drawings to the Engineer. The Engineer will review the submittals/drawings and return to the Contractor the sets of marked-up submittals/drawings with appropriate review comments. All shop drawings, when practical, shall be 24 inch by 36 inch in size.
- H. Once submittals/drawings are approved, they are to be distributed as follows:
1. Owner: One (1) copy
  2. Engineer: Two (2) copies
  3. Contractor: Two (2) copies
- I. The Contractor shall be responsible for and bear all costs of damages which may result from the ordering of any material or from proceeding with any part of work prior to the completion of the review by Engineer of the necessary shop drawings.
- J. The Contractor shall be fully responsible for observing the need for and making any changes in the arrangement of piping, connections, wiring, manner of installation, etc., which may be required by the materials/equipment he proposed to supply both as pertaining to his own work and any work affected under other parts, headings, or divisions of Drawings and Specifications.

#### 1.03. ENGINEER'S REVIEW OF SHOP DRAWINGS

- A. The Engineer's review of drawings, data and samples submitted by the Contractor will cover only general conformity to the Specifications, external connections, and dimensions which affect the installation. The Engineer's review and exceptions, if any, will not constitute an approval of dimensions, quantities, and details of the material, equipment, device, or item shown.
- B. The review of drawings and schedules will be general, and shall not be construed:
1. As permitting any departure from the Contract requirements;
  2. As relieving the Contractor of responsibility of any errors, including details, dimensions, and materials;
  3. As approving departures from details furnished by the Engineer, except as otherwise provided herein.

- C. If the drawings or schedules as submitted describe variations and show a departure from the Contract requirements which Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or time for performance, the Engineer may return the reviewed drawings, without noting an exception.
- D. When reviewed by the Engineer, each of the Shop Drawings will be identified as having received such review, being so stamped and dated. Shop Drawings stamped "NOT APPROVED/RESUBMIT" and with required corrections shown will be returned to the Contractor for correction and re-submittal.
- E. Re submittals will be handled in the same manner as first submittals. On Re submittals the Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, to revisions other than the corrections requested by the Engineer on previous submissions. The Contractor shall make any corrections required by the Engineer.
- F. If the Contractor considers any correction indicated on the drawings to constitute a change to the Contract Drawings or Specifications, the Contractor shall give written notice thereof to the Engineer.
- G. Shop drawings and submittal data shall be reviewed by the Engineer for each original submittal and first Re submittal; thereafter review time for subsequent Re submittals shall be charged to the Contractor in accordance with the terms of the Engineer's Agreement with the Owner.
- H. When the Shop Drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.
- I. No partial submittals will be reviewed. Submittals not complete will be returned to the Contractor for Re submittal. Unless otherwise specifically permitted by the Engineer, make all submittals in groups containing all associated items for:
  - 1. Systems
  - 2. Processes
  - 3. As indicated in Specifications Sections. All drawings, schematics, manufacturer's product data, certifications and other shop drawing submittals required by a system specification shall be submitted at one time as a package to facilitate interface checking.

## 1.04 SHOP DRAWINGS

- A. When used in the Contract Documents, the term "shop drawings" shall be considered to mean Contractor's plans for materials and equipment which become an integral part of the Project. These drawings shall be completed and detailed. Shop drawings shall consist of fabrication, erection and setting drawings and schedule drawings, manufacturer's scale drawing, and wiring and control diagrams. Cuts, catalogs, pamphlets, descriptive literature, and performance and test data, shall be considered only as supportive to required shop drawings as defined above. As used herein, the term "manufactured" applied to standard units usually mass-produced; and "fabricate" means items specifically assembled or made out of selected materials to meet individual design requirements.
- B. Manufacturer's catalog sheets, brochures, diagrams, illustrations and other standard descriptive data shall be clearly marked to identify pertinent materials, product or models. Delete information which is not applicable to the Work by striking or cross-hatching.
- C. Drawings and schedules shall be checked and coordinated with the work of all trades involved, before they are submitted for review by the Engineer and shall bear the Contractor's stamp of approval as evidence of such checking and coordination. Drawings or schedules submitted without this stamp of approval shall be returned to the Contractor for resubmission.
- D. Each shop drawing shall have a blank area 3½" by 3½", located adjacent to the title block. The title block shall display the following:
1. Project title and number
  2. Name of project building or structure
  3. Number and title of the shop drawing
  4. Date of shop drawing or revision
  5. Name of Contractor and subcontractor submitting drawing
  6. Supplier/manufacturer
  7. Separate detailer when pertinent
  8. Specification title and number
  9. Specification section
  10. Drawing number
- E. If drawings show variations from Contract requirements because of standard shop practice or for other reasons, the Contractor shall describe such variations in his letter of transmittal. If acceptable, proper adjustment in the Contract shall be implemented where appropriate. If the Contractor fails to describe such variations, he shall not be relieved of the responsibility for executing the work in accordance with the Contract, even though such drawings have been reviewed.

- F. Data on materials and equipment include, without limitation, materials and equipment lists, catalog data sheets, cuts, performance curves, diagrams, materials of construction and similar descriptive material. Materials and equipment lists shall give, for each item thereon, the name and location of the supplier or manufacturer, trade name, catalog reference, size, finish and all other pertinent data.
- G. For all mechanical and electrical equipment furnished, the Contractor shall provide a list including the equipment name, address and telephone number of the manufacturer's representative and service company so that service and/or spare parts can be readily obtained.
- H. All manufacturers or equipment suppliers who are proposed to furnish equipment or products shall submit an installation list to the Engineer along with the required shop drawings. The installation list shall include at least five (5) installations where identical equipment has been installed and has been in operation for a period of at least one (1) year.
- I. Only the Engineer will utilize the color "red" in marking shop drawing submittals.

#### 1.05 WORKING DRAWINGS

- A. When used in the Contract Documents, the term "working drawings" shall be considered to mean the Contractor's plan for temporary structures such as temporary bulkheads, support of open cut excavation, support of utilities, ground water control systems, forming and false work; for underpinning; and for such other work as may be required for construction but does not become an integral part of the project.
- B. Copies of working drawings as noted in paragraph 1.05 A. above, shall be submitted to the Engineer where required by the Contract Documents or requested by the Engineer, and shall be submitted at least thirty (30) calendar days (unless otherwise specified by the Engineer) in advance of their being required for work.
- C. Working drawings shall be signed by a registered Professional Engineer, currently licensed to practice in the State of Florida and shall convey, or be accompanied by, calculation or other sufficient information to completely explain the structure, machine, or system described and its intended manner of use. Review of working drawings by the Engineer will not relieve the Contractor in any way from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error are assumed by the Contractor; the Owner and Engineer shall have no responsibility therefore.

#### 1.06 SAMPLES

- A. The Contractor shall furnish, for the approval of the Engineer, samples required

by the Contract Documents or requested by the Engineer. Samples shall be delivered to the Engineer as specified or directed. The Contractor shall prepay all shipping charges on samples. Materials or equipment for which samples are required shall not be used in work until approved by the Engineer.

- B. Samples shall be of sufficient size and quantity to clearly illustrate:
1. Functional characteristics of the product, with integrally related parts and attachment devices.
  2. Full range of color, texture and pattern
  3. A minimum of two samples of each item shall be submitted
- C. Each sample shall have a label indicating:
1. Name of project
  2. Name of Contractor and subcontractor
  3. Material or equipment represented
  4. Place of origin
  5. Name of producer and brand (if any)
  6. Location in project
  7. Submittal Number
- (Samples of finished materials shall have additional marking that will identify them under the finish schedules).
- D. The Contractor shall prepare a transmittal letter in triplicate for each shipment of samples containing the information required in paragraph 1.06 B. above. He shall enclose a copy of this letter with the shipment and send a copy of this letter to the Engineer. Approval of a sample shall be only for the characteristics or use names in such approval and shall not be construed to change or modify any Contract requirements.
- E. Approved samples not destroyed in testing shall be sent to the Engineer or stored at the site of work. Approved samples of the hardware in good condition will be marked for identification and may be used in the work. Materials and equipment incorporated in work shall match the approved samples. Samples which failed testing or were not approved will be returned to the Contractor at his expense, if so requested at time of submission.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01370

### SCHEDULE OF VALUES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. Scope of Work:

1. Submit to the Engineer a Schedule of Values allocated to the various lump sum portions of the Work, at the Pre-Construction Conference, and as otherwise specified or requested to be submitted earlier as evidence of the Apparent Low Bidder's qualifications.
2. Upon request of the Engineer support the values with data which will substantiate their correctness. The data shall include, but not be limited to quantity of materials, all sub-elements of the activity, and their units of measure.
3. The Schedule of Values shall establish the actual value for each activity of the Work to be completed taken from the approved Critical Path Method (CPM) Construction Schedule, and shall be used as the basis for the Contractor's Applications for Payment.

###### B. Related Requirements Described Elsewhere:

1. Conditions of the Construction Contract.

##### 1.02 FORM AND CONTENT OF SCHEDULE OF VALUES

###### A. Type schedule on 8-1/2 inch x 11 inch white paper. Contractor's standard forms and computer printouts may be considered for approval by the Engineer upon Contractor's request. Identify schedule with:

1. Title of project and location.
2. Owner and purchase order number.
3. Engineer and project number.
4. Name and address of Contractor.
5. Contract designation.

6. Date of submission.
- B. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing item prices for progress payments during construction.
- C. Identify each line item with the number and the title of the respective section of the Specifications.
- D. For each major item of the Work, list sub-values of major products or operations under the major item.
- E. For the various portions of the Work:
  1. The amount for each item shall reflect a total installed cost including a directly proportional amount of the Contractor's overhead and profit.
  2. For items on which progress payments will be requested for stored materials, break down the value into:
    - a. The cost of the materials, delivered and unloaded, with taxes paid. Paid invoices are required for materials. Payment for materials shall be limited to the invoiced amount only.
    - b. The total installed value.
- F. Round off figures to nearest dollar amount.
- G. The sum of the costs of all items listed in the schedule shall equal the total Contract Price.
- H. For each item which has an installed value of more than \$15,000, provide a breakdown of costs to list major products or operations under each item.
- I. The form of the Schedule of Values shall parallel the form presented in Section 00845: Schedule of Values.

#### 1.03 SUB-SCHEDULE OF UNIT MATERIAL VALUES

- A. Submit a separate schedule of unit prices for materials to be stored on site and for those materials incorporated into the Work for which progress payments will be requested.
- B. Format shall parallel that shown in Section 00846: Materials Stored On Site Form

and Section 00845: Schedule of Values.

- C. The unit values for the materials shall be broken down into:
  - 1. Cost of the material, delivered and unloaded at the site, with taxes paid.
  - 2. Copies of paid invoices for component material shall be included with the payment request in which the material first appears.
- D. Only materials unique to the project may be billed when stored on site. Materials of standard use such as conduit, wire, small-diameter pipe, steel, etc., shall not be accepted for payment.
- E. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

#### 1.04 REVIEW AND RESUBMITTAL

- A. After review by Engineer, revise and resubmit Schedule of Values and Schedule of Unit Material Values as required.
- B. Resubmit revised schedules in same manner.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01380

### CONSTRUCTION PHOTOGRAPHS

#### PART 1 - GENERAL

##### 1.01 SCOPE OF WORK

- A. Scope of Work: The Contractor shall employ a competent photographer to take construction record photographs and video recording prior to start of work and periodically during the course of the Work.
- B. Related Requirements Described Elsewhere:
  - 1. Project Requirements: Section 01000
  - 2. Summary of Work: Section 01010
  - 3. Location, Scope and Special Requirements: Section 01300
  - 4. Project Record Documents: Section 01720

##### 1.02 PHOTOGRAPHY REQUIRED

- A. Digital photographs shall be taken in conformance with this Section shall be furnished to the Engineer with each pay request. Failure to comply will result in rejection of pay request.
- B. Digital photographs shall be taken at each of the major stages of construction and as directed by the Engineer.
- C. Digital photographs may be taken by the Contractor's personnel but must be of professional quality as herein specified. Photographs which are deemed unsatisfactory will be rejected and retakes will be required.
- D. Views and Quantities Required:
  - 1. Contractor shall supply Digital pictures on a minimum 4 GB USB Flash Drive. One (1) view of each activity, as directed by the Resident Project Representative, up to a limit of ten activities photographed per month.
  - 2. One (1) Digital picture of five (5) views of overall Project site monthly including any change of condition, any structural changes, relocation, and all conflicts with utilities, as directed by the Resident Project Representative.

- E. Digital pictures shall contain and comply with the following:
1. The Contractor shall maintain all Digital copies of photos for the entire Project and then shall convey the disks to the Owner at the completion of the Project.
  2. All disks shall be properly labeled with project name, project number, project start and end dates, Contractor's name, and Owner's name for which work was completed.
  3. The photographer shall agree to furnish additional disks to Owner and the Engineer at commercial rates applicable at time of purchase.

#### 1.03 COST OF PHOTOGRAPHY

- A. The Contractor shall pay costs for specified Digital photography and any required prints.

### PART 2 - PRODUCTS

#### 2.01 DIGITAL PHOTOGRAPH AND/OR PRINTS

- A. Type of Print (if required):
1. Paper: Single weight, color print paper.
  2. Finish: Smooth surface, glossy.
- Size: 4 inch x 6 inch for construction photos.
- B. Identify each photograph with the following (each print shall have information listed on back of each photograph and digital pictures shall have coordinating log sheet with information):
1. Name of project
  2. Orientation of view
  3. Date and time of exposure
  4. Name and address of photographer
  5. Each photograph shall be numbered in consecutive order.

Note: Digital prints shall be used to clarify as-builts.

### PART 3 - EXECUTION

#### 3.01 TECHNIQUE

- A. Factual Presentation.

- B. Correct exposure and focus.
  - 1. High resolution and sharpness (minimum 800 DPI)
  - 2. Maximum depth-of-field
  - 3. Minimum distortion

### 3.02 VIEWS REQUIRED

- A. Digital photographs shall adequately illustrate condition of construction and state of progress.
  - 1. At successive periods of photography, take at least one digital photograph from the same overall view as previously photographed.
  - 2. Consult with the Engineer at each period of digital photography for instructions concerning views required.

### 3.03 DELIVERY OF PRINTS

- A. Deliver photographs, on USB Flash Drive with coordinating log, to the Engineer as attachment to Application for Payment. (Flash Drive will become property of Engineer and/or client)
- B. Distribution of construction photographs, as soon as processed, is anticipated to be as follows:
  - 1. Engineer (one (1) set)
  - 2. Project record file (one (1) set to be stored by Contractor until the end of the project which shall be delivered with Project Record Documents as specified in Section 01720).
  - 3. Contractor (one (1) set)

## PART 4 – CONSTRUCTION VIDEO RECORDING

### 4.01 SCOPE OF WORK

- A. Furnish all labor, materials and equipment to furnish color audio video recording of the project site as specified herein.
- B. Furnish to the Engineer an original and one copy of a continuous color audio video recording on DVD around the entire project site. The recording shall be taken prior to any construction activity.
- C. The Engineer reserves the right to reject the audio video recording because of poor quality, unintelligible audio or uncontrolled pan or zoom. Any DVD rejected by the Engineer shall be redone at no cost to the Owner. Under no

circumstances shall construction begin until the Engineer has received and accepted the audio video DVD(s).

- D. The recording shall be performed by a qualified, established audio video recording firm, knowledgeable in construction practices which have a minimum of one (1) year experience in the implementation of established inspection procedures.

#### 4.02 COLOR AUDIO VIDEO SURVEY

- A. Complete coverage shall include all surface features located within the project site, easement areas, and adjacent private properties covering the extent of the project site to be utilized by the Contractor and will be supported by appropriate audio description made simultaneously with video coverage. Such coverage shall include, but not be limited to, all existing driveways, sidewalks, curbs, ditches, roadways including viaducts, landscaping, trees, culverts, headwalls, and retaining walls, and buildings located within the area. Video coverage shall extend to the maximum height of all structures within this zone.
- B. All recording shall be done during times of good visibility. No recording shall be done during periods of visible precipitation, or when more than ten percent of the ground area is covered with standing water, unless otherwise authorized by Owner.

#### 4.03 AUDIO AND VIDEO

- A. Contractor shall furnish continuous color, audio-video DVD(s) of professional quality.
- B. Pre and post construction recording should be recorded on a DVD –R disk, 4.7 gigabits, recorded in SP mode (120 mins) or better (HQ,HSP), disk must be finalized with no editing of information and must be properly marked with date, location, contractors name, job site, and name of Videographer. The date and time stamp must be visible at all times on image and disk must be stored in an individual sleeve.
- C. Each DVD shall begin with the Owner’s name, Contract name and number, Contractor’s name, date and location information such as street name, direction of travel, viewing side, etc.
- D. Information appearing on the DVD must be continuous and run simultaneously by computer generated transparent digital information. No editing or overlaying of information at a later date will be acceptable.
- E. Digital information will be as follows:
  - 1. Upper left corner

- a) Name of Contractor
- b) Day, date and time
- c) Name of project

2. Lower left corner

- a) Route of travel
- b) Viewing side
- c) Direction of travel
- d) Stationing

- F. Time must be accurate and continuously generated.
- G. Engineering station numbers must be continuous, be accurate and correspond to project stationing. The symbols should be the standard engineering symbols (i.e. 16+64).
- H. Written documentation must coincide with the information on the DVD so as to make easy retrieval of location sought for at a later date.
- I. The video system shall have the capability to transfer individual frames of video electronically into hard copy prints or photography negatives.
- J. Audio shall be recorded at the same time as the video recording and shall have the same information as on the viewing screen. Special commentary will be given for unusual conditions of buildings, sidewalks and curbing, foundations, trees and shrubbery, etc.
- K. All DVDs and boxes shall bare labels with the following information:
  - 1. Recording Number
  - 2. Owner's Name
  - 3. Date of Recording
  - 4. Project Name and Number
  - 5. Location and Standing Limit of DVD
- L. Prior to commencement of audio video recording, the contractor shall notify the Engineer in writing when and where the audio video recording will begin. The Engineer may provide a designated representative to accompany and oversee coverage of all recording operations. Audio video recording completed without an Engineer representative present will be unacceptable unless specifically authorized by the Engineer.

END OF SECTION

SECTION 01410

TESTING AND TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Contractor will employ, and pay for services of an Independent testing Laboratory to perform testing specifically indicated on the Contract Documents or specified in the Specifications herein and may at any other time elect to have materials and equipment tested for conformity with the Contract Documents.
2. Contractor shall cooperate with the laboratory to facilitate the execution of its required services.
3. Contractor shall provide engineer with all test results as indicated herein within five (5) days of receipt.

B. Related Requirements Described Elsewhere:

1. Testing laboratory inspection, sampling and testing is required for, but not limited to the following:
  - a. Excavating, Backfill and Compacting: Section 02221
  - b. Paving: Section 02300
  - c. Cast-in-Place and Poured Concrete: Section 03100

C. The following schedule defines the responsibility for various tests.

<u>Test</u>	<u>Notes</u>	<u>Paid for By</u>
Soil Compaction	Pipe Work: every 300 ft. at each lift of compaction minimum. Beneath Structures: each 500 sq.ft. lift of compaction minimum and each lift around structures.	Contractor
Pressure	As specified in Section 15050	Contractor

Bacteriological	As required by local and state agencies.	Contractor
LBR	Each 1500 SF of pavement (minimum).	Contractor
Concrete	Slump test each delivery and compression test five cylinders every 50 C.Y. (minimum).	Contractor

D. Additional Tests: The Contractor shall pay for first tests as specified herein. In the event that first test samples do not meet the applicable material specification, the Contractor shall take measures to conform the material and equipment to the Specifications. All subsequent tests shall be paid for by the Contractor.

### 1.02 LABORATORY TESTS

A. The materials listed below shall require advance and periodic laboratory tests as indicated, and shall be sampled in accordance with the methods of the A.S.T.M. and as directed by the Engineer. With the exception of concrete test cylinders and mixing water, duplicate advance samples of all materials requiring laboratory tests shall be submitted to the Engineer, one of which will be certified by the Engineer for submission to the testing laboratory and the other retained on the job site in suitable storage provided by the Contractor. Except as noted below, preliminary samples of materials for advance laboratory tests shall be submitted at least two weeks prior to starting delivery of such materials to the site of the project. The testing laboratory shall furnish both the Engineer and the Contractor with two copies of the reports showing the results of such tests, and the reports shall be considered as sufficient evidence of the acceptance or rejection of the quality of the materials tested. The specifications for, and the method of testing, will be found under the detailed specifications for the particular material involved. All samples shall be properly packed and clearly marked as to source and intended use.

MATERIALS	TEST FREQUENCY	SAMPLE SIZE	SHIPPING CONTAINER
Fine Aggregate	Advance, first shipment then each 100 tons	100 lbs.	Canvas Sack
Coarse Aggregate	Advance, first shipment then each 200 tons	Stone or Gravel 200 lbs.	Strong Sack
Concrete	Advance test using approved materials	4 cylinders per mix, 2 broken at 7 days, 2 at 28 days	
Concrete (b) Air Entrainment	Advance test on trial mix air entraining agent is used. Test as specified under Article 405 (e)		

### 1.03 TESTS

- A. The materials listed below shall be tested at the shop or plant of, and by, the producer. Each manufacturer of such materials shall be fully equipped to carry out the tests herein designated. Upon demand of the Engineer, the manufacturer shall perform such additional number of tests as the Engineer may deem necessary to establish the quality of the material offered for use. The Engineer shall be furnished with the certified records of reports of the results of all tests, such reports of records to contain a sworn statement that the tests have been made as specified.

<b>MATERIAL</b>	<b>TEST METHOD</b>
Cement	ASTM C114
Ductile Iron Pipe (Centrifugally Cast)	As required under ANSI A21.51-1176
Brick	ASTM C-32
Reinforcement	ASTM A-15 & A-305

### 1.04 FIELD TESTS

- A. All sewers, water lines, piping and equipment shall be tested in the field in the presence of the Engineer or his authorized assistant, in the manner prescribed in the sections of these specifications pertaining to such installations. The Engineer may also perform or have performed any other field tests necessary to determine compliance with the Contract requirements. The Contractor shall furnish all necessary labor, equipment, and materials for such tests and, with the exception of the Engineer's expenses, shall bear all the cost thereof.

### 1.05 PAVING TESTS

- A. The following tests will be made, unless otherwise stipulated by the Engineer, by a testing laboratory approved by the Engineer.

<b>Material</b>	<b>Test or Test Method</b>	<b>Frequency</b>
Subbase	1) AASHO T-180 (Modified Proctor Minimum 98% Density)	Every 300 LF
	2) Limerock Bearing Ratio 40	Every 300 LF
Base	(Soil Cement) (1) Mix Design 350 psi @ 28 days. Mix design required 7 days in advance.	Prior to Mixing Base
	(2) Optimum Moisture content and Maximum Density (AASHTO T-134)	Every 300 LF
	(3) LBR 100	Every 1500 sf
	(4) Depth (6 inch minimum)	Every 300 feet
Paving	(1) Job Mix Formula. Required 7 days in advance and submit to Engineer	Each Job
	(2) Bitumen Content of Mix	Every 2500 SY or fraction thereof
	(3) In Place Density	Every 300' (left, right & center)
	(4) Marshall Field Stability Index	Every 1500 SY or fraction thereof
	(5) Thickness Cores	Every 300' (left, right, & center)

#### 1.06 Basis of Payment

- A. All shop tests and mill inspection shall be included in the price of the manufactured article, and no separate or extra payment will be made for such tests and inspection.
- B. All laboratory and field tests will be paid for by the Contractor; he shall furnish all necessary labor, equipment and materials for such tests and, with the exception of the Engineer's expenses, shall bear all the costs thereof.

## 1.07 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 specific standards; ASTM, other recognized authorities, and as specified.
  - 2. Determine and report on compliance with requirements of Contract Documents.
- C. Promptly notify the Engineer and Contractor of material or operations which do not meet the specifications.
- D. Promptly submit five (5) copies of reports of inspections and tests to the Engineer including:
  - 1. Date issued.
  - 2. Project title and Engineer's job number.
  - 3. Testing Laboratory name and address.
  - 4. Name and signature of inspector.
  - 5. Date of inspection of inspector.
  - 6. Date of inspection or sampling.
  - 7. Date of test.
  - 8. Identification of product and Specification section.
  - 9. Location in project.
  - 10. Type of inspection or test.
  - 11. Compliance with Contract Documents or not.
- E. Laboratory is not authorized to:
  - 1. Release, revoke, alter, or enlarge on requirements of Contract Documents.
  - 2. Approve or reject any portion of work.
  - 3. Perform any duties of the Contractor.

## 1.08 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with laboratory personnel; provide access to Work and manufacture's operations.

- B. Secure and deliver to the laboratory adequate representational samples of materials purposed to be used and which require testing.
- C. Provide to the laboratory the preliminary design mix proposed to be for concrete, and other materials mixes which require control by the testing laboratory.
- D. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacturer of fabrication. Standard specifications for quality and workmanship are indicated in the Contract Documents. The Engineer may require the Contractor to provide statements or certificates from the manufacturers and fabricators that in full accordance with the standard specifications for quality and workmanship indicated in the Contract Documents. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the Contractor, and no extra charge to the Owner shall be allowed on account of such testing and certification.
- E. Furnish incidental labor and facilities:
  - 1. To provide access to Work to be tested.
  - 2. To obtain and handle samples at the Project site or at the source of the product to be tested.
  - 3. To facilitate inspections and tests.
  - 4. For storage and curing of test samples.
  - 5. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01500

### TEMPORARY FACILITIES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

A. Scope of Work: Provide temporary facilities required which shall include but are not necessarily limited to the following:

1. By Contractor:
  - a. Telephone.
  - b. Storage sheds.
  - c. Temporary water service.
  - d. Temporary sanitary facilities.
  - e. Temporary electrical service.
  - f. Contractor's Field office.
2. By Owner:
  - a. None.

##### 1.02 TEMPORARY WATER

A. Furnish and install temporary water service for use throughout construction period.

1. Water for construction purposes.
2. Water for other purposes.
  - a. Testing.
  - b. Temporary sanitary facilities.
  - c. Cleaning.
  - d. Potable water source (separate).

- B. Maintain adequate volume of water for all purposes.
- C. Water Source:
  - 1. Supplier: Local Water Utility
  - 2. Potable water used shall be separately metered and protected with approved back flow prevention devices.
- D. Maintain strict supervision of use of temporary services.
  - 1. Enforce conformance with applicable codes and standards.
  - 2. Enforce sanitary practices.
  - 3. Prevent waste of water.
  - 4. Prevent abuse of services.
- E. Costs of Installation and Operation: Pay costs for water used by all trades, including costs of installation, maintenance, and removal of pipe, meters, and equipment.
- F. Requirements of Regulatory Agencies:
  - 1. Obtain, pay for permits, fees, deposits required by governing authorities.
  - 2. Comply with federal, state and local codes.

### 1.03 TEMPORARY ELECTRICITY

- A. Furnish and install temporary electric power service for construction needs throughout construction period.
  - 1. Power centers for miscellaneous tools and equipment used in construction work.
    - a. Locate so that power is available at any desired point with no more than 100 feet extension.
    - b. Provide weatherproof distribution box with minimum of four (4), 20 amp, 120 volt grounded outlets with GFCI protection.

- c. Provide circuit breaker protection for each outlet.
    - d. Provide equipment grounding continuity for entire system.
    - e. Users shall provide grounded, Underwriters Laboratories, Inc. (UL) approved extension cords from power center to point of operations.
  - 2. Power for construction equipment.
  - 3. Power for testing and checking equipment.
  - 4. Power for welding units and for other equipment having special power requirements.
  - 5. Power for Contractors, Subcontractors and Owner/Engineer's field offices.
- B. Capacity:
- 1. Adequate electrical service for construction use by all trades during construction period.
  - 2. Notify Power Company if unusually heavy loads such as welding, and other special power requirements, will be connected.
    - a. Provide special circuits for heavy load requirements.
    - b. Do not overload any circuit.
- C. Power Source:
- 1. Supplier: Florida Power and Light.
  - 2. Provide minimum 240 volt, single phase, 60 hertz power service to project site.
- D. Maintain strict supervision of use of temporary services:
- 1. Enforce conformance with applicable standards.
  - 2. Enforce safe practices.
  - 3. Prevent abuse of services.

- E. Costs of Installation and Operation: Pay costs of temporary electrical power used, including costs of installation, meter, maintenance, and removal of temporary services from point of connection.
- F. Requirements of Regulatory Agencies:
  - 1. Obtain and pay for permits as required by governing authorities.
  - 2. Comply with applicable codes.
    - a. National Electrical Code.
    - b. National Electrical Safety Code.
    - c. National Fire Protection Association.
    - d. Federal, state and local codes and utility company regulations.

#### 1.04 TEMPORARY SANITARY FACILITIES

- A. Furnish and install temporary sanitary facilities for use throughout construction period.
  - 1. Potable water for construction personnel:
    - a. Portable containers to dispense drinking water.
    - b. Maintain temperature between 45 degrees Fahrenheit (EF) (7.5 degrees C) and 55 EF (13 degrees C).
  - 2. Enclosed toilet facilities for construction personnel.
  - 3. General employee washing facilities.
  - 4. Existing wash down facilities at the plant shall not be used.
- B. Minimum number of fixtures:
  - 1. Toilets and Urinals
    - a. For less than 20 employees: One (1) toilet.
    - b. For 20 or more employees: One (1) toilet and 1 urinal per 40 workers.

2. Washing Facilities: Adequate for number of employees, for type of work requiring washing facilities.
- C. Maintain strict supervision of use of facilities:
1. Enforce conformance with applicable standards.
  2. Maintain, service and clean facilities.
  3. Enforce proper use of sanitary facilities.
- D. Cost of Installation and Operation:
1. Pay costs of temporary sanitary facilities, including costs of installation, maintenance and removal.
  2. Costs of Water: As specified in Paragraph 1.02C.2., herein.
  3. Pay service charges for use of portable sanitary units.
- E. Facility Locations:
1. Within the project site.
  2. Drinking Water: Convenient to work stations.
  3. Toilet and washing facilities.
    - a. Secluded from public observation.
    - b. Convenient for use of personnel in relation to work stations.
  4. Obtain acceptance of Engineer and Owner.
- F. Enclosure for Toilet Facilities:
1. Weatherproof, sight proof, sturdy temporary enclosures.
  2. Insect-proof screening, adequate natural ventilation.

G. Requirements of Regulatory Agencies:

1. Obtain and pay for permits as required by governing authorities.
2. Comply with federal, state, and local codes.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. Materials may be new or used, but must be adequate for purpose required, sanitary and must not violate requirements of applicable codes.
2. At Contractor's option, patented specialty products may be used, in compliance with applicable codes.

2.02 ELECTRICITY (See Section 1.03)

- A. Comply with Division 16: Electrical.
- B. Provide required facilities, including transformers, conductors, poles, conduits, raceways, breakers, fuses and switches.
- C. Provide appropriate enclosures for environment in which used, in compliance with NEMA standards.

2.03 TEMPORARY SANITARY FACILITIES (See Section 1.04)

A. Drinking Water Facilities (Portable Containers):

1. Tightly closed, and equipped with dispensing tap.
2. Clearly label contents.
3. Do not use for other purposes.
4. Provide single-service disposable cups, with sanitary container for unused cups, and waste receptacles for used cups.

B. Toilet Facilities

1. Portable Toilets; either:
  - a. Chemical toilets.
  - b. Recirculating toilets.
  - c. Combustion toilets.
2. Toilet Tissue: Provide at each toilet, on suitable dispenser.

2.04 CONTRACTOR'S FIELD OFFICE AND FACILITIES

A. Specific Requirements:

1. Provide either a separate building or a trailer of adequate floor space for Contractor's use.
2. The trailer shall be weather-tight, have a tight level floor at least 8 inches off the ground, and shall be insulated, have suitable screened ventilation and a solid door.
3. The office shall be provided with, heating equipment, water, electrical wiring, outlets, and fixtures suitable to light the tables and desk adequately. Toilet facilities are to be included with a holding tank to be pumped clean daily by the Contractor. Garbage shall be collected daily and clean-up of the trailer shall be provided three (3) times per week.
4. Lighting and Temperature Control: Window air conditioning unit capable of maintaining the trailer at 70 to 80°F, but a minimum of 12,000 BTU (1 ton) rating.

B. Furniture and Equipment: The office shall have the following furniture and equipment:

1. Telephone: One (1) direct line instrument.
2. Racks and file for Project Record Documents.
3. Facsimile machine on a dedicated line.
4. Other furniture and furnishings: Contractor's option.

- C. Within ten (10) days after Notice to Proceed, submit a sketch showing proposed number and locations; including storage sheds and trailers. The Contractor shall locate all temporary construction offices and storage trailers where approved by the Owner and the Engineer.

#### 2.05 TEMPORARY PARKING

- A. Provide a location, approved by the Engineer, for gravel or other suitable surface for Contractor's employee, Owner/Engineer representatives and visitor parking. Personal vehicles will be restricted from the work area.
- B. Provide gravel parking space at the Contractor's trailer for a minimum of eight (8) vehicles. Provide gravel parking space at the Owner/Engineer's field office for a minimum of four (4) vehicles.

#### 2.06 SECURITY LIGHTING

- A. Provide for adequate pole mounted flood lights for parking area at the Contractor and Owner/Engineer's trailer areas. Maintain lighting on a photocell or timer.

### PART 3 - EXECUTION

#### 3.01 GENERAL

- A. Install work in a neat and orderly manner.
- B. Make structurally sound throughout.
- C. Maintain to provide continuous service.
- D. Modify and extend service as work progress requires.

#### 3.02 TEMPORARY WATER

- A. Locate piping and outlets.
  - 1. Provide service convenient to work stations.
  - 2. Avoid interference with:
    - a. Traffic and work areas.

- b. Materials handling equipment.
  - c. Storage areas.
- B. Do not run piping on floor or on ground.
- C. When necessary to maintain pressure, provide temporary pumps, tanks, and compressors.

### 3.03 TEMPORARY ELECTRICITY

- A. Service and distribution may be overhead or underground.
- B. Locate to avoid interference with:
  - 1. Traffic and work areas.
  - 2. Cranes.
  - 3. Material handling equipment.
  - 4. Storage areas.
- C. Do not run branch circuits on floor or on ground.
- D. Wire all safety devices specified for final operation of equipment.
- E. Check operation of safety devices.

### 3.04 TEMPORARY SANITARY FACILITIES

- A. Portable Toilets:
  - 1. Erect securely, and anchor to prevent dislocation or tipping over.
  - 2. Service as often as necessary to prevent accumulation of wastes, and creation of unsanitary conditions.
  - 3. Use only unless sewer and water service can be provided to site.
- B. Washing Facilities: Provide faucets, drains and other washing facilities suitable for the type of work requiring washing.

3.05 REMOVAL

- A. Completely remove temporary materials and equipment upon completion of construction.
- B. Clean, and repair damage caused by installation and restore to specified, or original condition.

END OF SECTION

## SECTION 01505

### MOBILIZATION

#### PART I - GENERAL

##### 1.01 DEFINITION AND SCOPE

- A. Mobilization shall include the obtaining of all permits, insurance, and bonds; moving onto the site of all plant and equipment; furnishing and erecting plants, temporary buildings, and other construction facilities; all as required for the proper performance and completion of the Work. Mobilization shall include, but not be limited to, the following principal items.
1. Move onto the site all Contractors' plant and equipment required for first month operations.
  2. Install temporary construction power, wiring, and lighting facilities.
  3. Establish fire protection plan and safety program.
  4. Secure construction water supply.
  5. Provide field office trailers for Contractor and as may be specified for Owner and Engineer.
  6. Provide on-site sanitary facilities and potable water facilities as specified.
  7. Arrange for and erect Contractor's work and storage yard and employee's parking facilities.
  8. Submit all required insurance certificates and bonds.
  9. Obtain all required permits.
  10. Post all OSHA, EPA, Department of Labor, and all other required notices.
  11. Have Contractor's superintendent at the job site full time.
  12. Submit a detailed construction CPM schedule acceptable to the Engineer as specified.
  13. Submit a schedule of values of the Work.

14. Submit a schedule of submittals.

1.02 DEMOBILIZATION

- A. Demobilization is the timely and proper removal of all contractor owned material, equipment or plant, from the job site and the proper restoration or completion of work necessary to bring the site into full compliance with the contract documents.

1.03 PAYMENT FOR MOBILIZATION/DEMOBILIZATION

- A. The Contractor's attention is directed to the condition that no payment for mobilization, or any part thereof, will be approved for payment under the Contract. Mobilization/Demobilization is a subsidiary obligation of the Contractor.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01525  
CONSTRUCTION AIDS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope of Work: Furnish, install and maintain required construction aids, remove on completion of Work.
- B. Related Requirements Described Elsewhere:
  - 1. Summary of Project: Section 01010.
- C. Comply with applicable requirements specified in Sections of Division 2 through 16.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Materials may be new or used, suitable for the intended purpose, but must not violate requirements of applicable codes and standards.

2.02 CONSTRUCTION AIDS

- A. Provide construction aids and equipment required by personnel and to facilitate execution of the Work: scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes and other such facilities and equipment such as temporary valves and fittings. Refer to respective Sections for particular requirements for each trade.
- B. When permanent stair framing is in place, provide temporary treads, platforms and railings, for use by construction personnel.
- C. Maintain facilities and equipment in first-class condition.

## PART 3 - EXECUTION

### 3.01 PREPARATION

- A. Consult with the Engineer, review site conditions and factors which affect construction procedures and construction aids, which may be affected by execution of the Work.

### 3.02 GENERAL

- A. Comply with applicable requirements specified in sections of Division 2 through 16.
- B. Relocate construction aids as required by progress of construction, by storage of work requirements of Owner and other contractors employed at the site.

### 3.03 REMOVAL

- A. Completely remove temporary materials, equipment and services:
  - 1. When construction needs can be met by use of permanent construction.
  - 2. At completion of work.
- B. Clean and restore areas damaged by installation by use of temporary facilities.
  - 1. Remove foundations and underground installations for construction aids.
  - 2. Grade and grass areas of site affected by temporary installations to required elevations, slopes, ground cover and clean the area.
- C. Restore permanent facilities used for temporary purposes to specified condition or in kind if not specified.

END OF SECTION

## SECTION 01568

### TEMPORARY EROSION AND SEDIMENTATION CONTROL

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. Scope of Work:

1. The Work specified in this Section consists of designing, providing, maintaining and removing temporary erosion and sedimentation controls as required by Rules and Regulations and permit conditions.
2. Temporary erosion controls include, but are not limited to, grassing, mulching, setting, watering and re-seeding on-site surfaces and soil and borrow area surfaces and providing interceptor ditches at ends of berms and at those locations which will ensure that erosion during construction will be either eliminated or maintained within acceptable limits as established by the Owner.
3. Temporary sedimentation controls include, but are not limited to silt dams, traps, barriers, and appurtenances at the foot of sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits as established by the Owner.
4. Contractor is responsible for providing effective temporary erosion and sediment control measures during construction or until final controls become effective.

###### B. Related Work Described Elsewhere:

1. Excavation, Backfill, and Embankment: Section 02100
2. Grassing, Mulching and Sodding: Section 02900.

#### PART 2 - PRODUCTS

##### 2.01 EROSION CONTROL

- A. Sodding is specified in Section 02900.
- B. Netting shall be fabricated of material acceptable to the Owner.

## 2.02 SEDIMENTATION CONTROL

- A. Bales shall be clean, seed-free cereal hay type.
- B. Netting shall be fabricated of material acceptable to the Owner.
- C. Filter stone shall be crushed stone which conforms to Florida Department of Transportation (FDOT) specifications.
- D. Concrete block shall be hollow, non-load bearing type.
- E. Concrete shall be exterior grade not less than 1-inch thick.

## PART 3 - EXECUTION

### 3.01 EROSION CONTROL

- A. Minimum procedures for grassing are:
  - 1. Scarify slopes to a depth of not less than 6 inches and remove large clods, rock, stumps, roots larger than 1/2 inch in diameter and debris.
  - 2. Sow seed within 24 hours after the ground is scarified with either mechanical seed drills or rotary hand seeders.
  - 3. Apply mulch loosely and to a thickness of between 3/4 inch and 1-1/2 inches.
  - 4. Apply netting over mulched areas on sloped surfaces.
  - 5. Roll and water seeded areas in a manner which will encourage sprouting of seeds and growing of grass. Reseed areas which exhibit unsatisfactory growth. Backfill and seed eroded areas.

### 3.02 SEDIMENTATION CONTROL

- A. Install and maintain silt dams, traps, barriers, and appurtenances as shown on the approved descriptions and working drawings. Hay bales which deteriorate and filter stone which is dislodged shall be replaced.

### 3.03 PERFORMANCE

- A. Should any of the temporary erosion and sediment control measures employed by the Contractor fail to produce results which comply with the requirements of the State of Florida, the Owner or Engineer, the Contractor shall immediately take whatever steps are necessary to correct the deficiency at his own expense.

END OF SECTION

## SECTION 01580

### PROJECT IDENTIFICATION AND SIGNS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. Scope of Work:

1. Furnish, install and maintain project signs.
2. Remove signs on completion of construction.
3. Allow no other signs other than signs approved by the Engineer to be displayed.

###### B. Related Requirements Described Elsewhere:

1. Summary of Project: Section 01010.
2. Location, Scope and Special Requirements: Section 01300

##### 1.02 PROJECT SIGNS

A. One (1) painted sign with lettering, size, color and construction in accordance with the local requirements.

B. Erect on the plant site at a location of high public visibility, as approved by the Engineer and the Owner.

###### C. Information:

1. Project Sign:
  - a. Owner title and logo.
  - b. Project name.
  - c. Contractor.
  - d. Engineer.

##### 1.03 INFORMATIONAL SIGNS

A. Painted signs with painted lettering, or standard products.

1. Size of signs and lettering: As required by the Owner, or as appropriate to usage.
2. Color: As required by the Owner, otherwise of uniform colors throughout Project.

- B. Erect at appropriate locations to provide required information.
- C. Information:
  - 1. Contractor's name and home office address.
  - 2. List of subcontractors and type of subcontract work.

#### 1.04 QUALITY ASSURANCE

- A. Sign Painter: Professional experience in type of work required.
- B. Finishes, Painting: Adequate to resist weathering and fading for scheduled construction period.

#### 1.05 SUBMITTALS

- A. An 11 inch by 17 inch sketch of the project sign shall be submitted to the Engineer for approval prior to final preparation of the project sign.

### PART 2 - PRODUCTS

#### 2.01 SIGN MATERIALS

- A. Structure and Framing: Sign shall be 3/4" Marine grade plywood, in sound condition, structurally adequate and suitable for specified finish.
- B. Sign Surfaces: Exterior softwood plywood with medium density overlay, standard large sizes to minimize joints.
  - 1. Thickness: As required by standards to span framing members, to provide even, smooth surface without waves or buckles.
- C. Rough Hardware: Galvanized.
- D. Project Sign details are illustrated in Figure 01580-A.

### PART 3 - EXECUTION

#### 3.01 PROJECT IDENTIFICATION SIGNS

- A. Paint exposed surface of supports, framing and surface material; one coat of primer and one coat of exterior paint.
- B. Paint graphics in styles, sizes, and colors as selected and approved by the Owner.

#### 3.02 MAINTENANCE

- A. Maintain signs and supports in a neat, clean condition; repair damages to structures, framing or signs.

### 3.03 REMOVAL

- A. The Contractor shall remove signs, framing, supports and foundations and properly dispose of at completion of project.

END OF SECTION

## SECTION 01600

### MATERIAL AND EQUIPMENT

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. Scope of Work:

1. Conform to applicable specifications and standards.
2. Comply with size, make, type and quality specified, or as specifically approved in writing by Engineer.
3. Manufactured and fabricated products:
  - a. Design, fabricate and assemble in accordance with the best engineering and shop practices.
  - b. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
  - c. Two or more items of the same kind shall be identical, by the same manufacturer.
  - d. Products shall be suitable for service conditions.
  - e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
4. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

##### 1.02 APPROVAL OF MATERIALS

- A. Only new materials and equipment shall be incorporated in the work. All materials and equipment furnished by Contractor shall be subject to the inspection and approval of Engineer. No material shall be delivered to the work without prior approval of Engineer.
- B. Within twenty (20) days after the Effective Date of the Agreement, Contractor shall submit to Engineer, data relating to materials and equipment he proposes to furnish for the work. Such data shall be in sufficient detail to enable Engineer to identify the particular product to form an opinion as to its conformity to the specifications.

- C. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by Contractor. If Engineer requires, either prior to beginning or during progress of the work, Contractor shall submit samples of materials for such special tests as may be necessary to demonstrate that they conform to the specifications. Such samples shall be furnished, stored, packed and shipped as directed at Contractor's expense. Except as otherwise noted, Contractor shall make arrangements for and pay for the tests.
- D. Contractor shall submit data and samples sufficiently early to permit consideration and approval before materials are necessary for incorporation in the work. Any delay of approval resulting from Contractor's failure to submit samples or data promptly shall not be used as a basis of claim against Owner or Engineer.
- E. In order to demonstrate the proficiency of workers or to facilitate the choice among several textures, types, finishes and surfaces, Contractor shall provide such samples of workmanship or finish as may be required.
- F. The materials and equipment used on the work shall correspond to the approved samples or other data.

#### 1.03 SUBSTITUTIONS AND PRODUCT OPTIONS

- A. The substitution requirements of this Section are in addition to the requirements of the General Conditions and Supplementary Conditions.
- B. The intent of these Specifications is to provide Owner with a quality facility without discouraging competitive bidding. Substitutions may be submitted and will be evaluated as specified herein.
- C. A Request for Substitution of Product may be submitted after the Contractor:
  - 1. Has investigated the proposed product and determined that it is equal to or superior to specified product, furnishes a certification to that effect and waives all rights to additional payment or time that may subsequently become necessary due to the failure of the substituted product to perform adequately.
  - 2. Agrees to provide same warranties or bonds for product substitution as for product specified.
  - 3. Agrees to be responsible for coordinating and paying for any necessary changes to other work required by approved substitutions or product options which he selects and shall pay all such costs including the costs of the services of the design professional to revise the Contract Documents, if such revisions are required.

4. Waives all claims for additional costs due to substitution which may subsequently become apparent.
5. Is offering either a substantial credit to the Owner for acceptance of the substitution or a convincing justification that the product to be provided as the substitution is substantially superior in quality, performance, compatibility with adjacent products, durability, vandal-resistance or in other important ways.

D. Engineer's Action:

1. Engineer will consider written requests for product substitution for a period of 45 calendar days after the effective date of the Agreement. Engineer will review requests for substitutions with reasonable promptness and notify Contractor in writing of Owner's decision to accept or reject requested substitutions. Only the Owner may accept a substitution.
2. Substitution requests made by means of shop drawings or product data submittal will not be considered.
3. After the period of 45 days has elapsed, the only substitution requests which will be considered are those which are made necessary by the removal of the specified products from the market or by other similar, unavoidable circumstances beyond the control of the Contractor.

#### 1.04 MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION

- A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including five copies to Engineer.
  1. Maintain one set of complete instructions at the job site during installation and until completion.
- B. Handle, install, correct, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.
  1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.
  2. Do not proceed with work without clear instructions.
- C. Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

## 1.05 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of products in accordance with construction schedules, coordinate to avoid conflict with work and conditions at the site.
  - 1. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
  - 2. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that products are properly protected and undamaged.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

## 1.06 STORAGE AND PROTECTION

- A. The Contractor shall furnish a covered, weather-protected storage structure providing a clean, dry, noncorrosive environment for all mechanical equipment, valves, architectural items, electrical and instrumentation equipment, and special equipment to be incorporated into this project. Storage of equipment shall be in strict accordance with the "instructions for storage" of each equipment supplier and manufacturer including connection of heaters, placing of storage lubricants in equipment, etc. Corroded, damaged or deteriorated equipment and parts shall be replaced before acceptance of the project. Equipment and materials not properly stored will not be included in a payment estimate.
- B. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible.
  - 1. Store products subject to damage by the elements in weathertight enclosures such as buildings or trailers which have a concrete or wooden floor, a roof and fully closed walls on all sides.
  - 2. Maintain temperature and humidity within the ranges required by manufacturer's instructions (i.e. electrical and instrumentation equipment).
  - 3. Protect mechanical and electrical equipment from being contaminated by dust, dirt and moisture.
  - 4. Store fabricated products above the ground, on blocking or skids prevent soiling and staining. Cover products which are subject to deterioration with impervious sheet coverings, provided adequate ventilation to avoid condensation.

5. Provide heated storage space for material which would be damaged by freezing.
  6. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.
  7. Prior to the installation of equipment it shall be stored at locations designated and approved by the Engineer.
- C. All materials and equipment to be incorporated in the work shall be handled and stored by Contractor before, during and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft or damage of any kind whatsoever to the material or equipment.
- D. Cement, sand and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural and miscellaneous steel, and reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Beams shall be stored with the webs vertical. Precast concrete beams shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, chipping, cracking and spalling to a minimum.
- E. All materials which, in the opinion of Engineer, have become so damaged as to be unfit for the use intended or specified shall be promptly removed from the site of the work, and Contractor shall receive no compensation for the damaged material or its removal.
- F. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored materials and equipment to assure that products are maintained under specified conditions, and free from damage or deterioration.
- G. Protection After Installation: Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove covering when no longer needed.
- H. The Contractor shall be responsible for all material, equipment, and supplies delivered to Owner under this Contract until final inspection of the work and acceptance thereof by Owner. In the event any such material, equipment and supplies are lost, stolen, damaged or destroyed prior to final inspection and acceptance, Contractor shall replace same without additional cost to Owner.
- I. Should Contractor fail to take proper action on storage and handling of equipment supplied under the Contract within seven days after written notice to do so has been given, Owner retains the right to correct all deficiencies noted in previously

transmitted written notice and deduct the cost associated with these corrections from Contractor's Contract. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, engineering and any other costs associated with making the necessary corrections.

#### 1.07 SPECIAL TOOLS

- A. Manufacturers of equipment and machinery shall furnish any special tools (including grease guns or other lubricating devices) required for normal adjustment, operations and maintenance, together with instructions for their use. Contractor shall preserve and deliver to Owner these tools and instructions in good order no later than upon completion of the Contract.

#### 1.08 STORAGE AND HANDLING OF EQUIPMENT ON SITE.

- A. Attention shall be given to the storage and handling of equipment on site. As a minimum, the procedure outlined below shall be followed:
  1. Equipment shall not be shipped until approved by Engineer. The intent of this requirement is to reduce on-site storage time prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from Engineer. Equipment shipped to the site shall be stored in accordance with Paragraph 1.06, herein. Operation and maintenance data shall be submitted to Engineer for review prior to shipment of equipment.
  2. All equipment having moving parts such as gears, electric motors, etc. and/or instruments shall be stored in a temperature and humidity controlled building approved by Engineer, until such time as the equipment is to be installed.
  3. All equipment shall be stored fully lubricated with oil, grease, etc. unless otherwise instructed by the manufacturer.
  4. Manufacturer's storage instructions shall be carefully studied by Contractor and reviewed with Engineer by him. These instructions shall be carefully followed and a written record of this kept by the Contractor.
  5. Moving parts shall be rotated a minimum of once weekly to insure proper lubrication and to avoid metal-to-metal "welding". Upon installation of the equipment, Contractor shall start the equipment, at least half load, once weekly for an adequate period of time to insure that the equipment does not deteriorate from lack of use.
  6. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. Mechanical equipment to be used in the work, if stored for longer than ninety

(90) days, shall have the bearings cleaned, flushed and lubricated prior to testing and startup, at no extra cost to Owner.

7. Prior to acceptance to the equipment, Contractor shall have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period. Such certifications by the manufacturer shall be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the manufacturer will guarantee the equipment equally in both instances. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at Contractor's expense.

#### 1.09 WARRANTY

- A. For all major pieces of equipment, submit a warranty from the equipment manufacturer as specified. The manufacturer's warranty period shall be concurrent with the Contractor's for one (1) year after the time of acceptance.

#### 1.10 SPARE PARTS

- A. Spare parts for certain equipment have been specified in the pertinent sections of the Specifications. Contractor shall collect and store all spare parts so required in an area to be designated by Engineer. In addition, Contractor shall furnish Engineer an inventory listing all spare parts, the equipment they are associated with, the name and address of the supplier, and the delivered cost of each items. Spare parts shall be turned over in conjunction with the "Spare Parts List" as shown. Copies of actual invoices for each item shall be furnished with the inventory to substantiate the delivered cost.

#### 1.11 GREASE, OIL AND FUEL

- A. All grease, oil and fuel required for testing of equipment shall be furnished with the respective equipment. Owner shall be furnished with a year's supply of required lubricants including grease and oil of the type recommended by manufacturer with each item of equipment supplied.
- B. Contractor shall be responsible for changing the oil in all drives and intermediate drives of each mechanical equipment after initial break-in of the equipment, which in no event shall be any longer than three weeks of operation.

END OF SECTION

## SECTION 01657

### START-UP

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. The Work may be segmented into several phases of construction in a logical order to meet the project schedule. Portions of the Work may be utilized prior to Substantial Completion of all the Work. Also, certain items of equipment are to be temporarily utilized in a phased segment of the Work and then relocated in a subsequent phase in a permanent installation.

#### PART 2 - PRODUCTS (NOT USED)

#### PART 3 - EXECUTION

##### 3.01 PRELIMINARY MATTERS

- A. Start-up Certification: Prior to start-up, successfully complete all testing required of the individual components of work in the presence of the Engineer or is representative.
- B. Demonstrate to the Engineer that all temporary jumpers and/or bypass have been removed and that all components are operating under their own controls as designated.
- C. Coordinate start-up activities with equipment suppliers, subcontractors, and the Owner's operating personnel at the site and with the Engineer prior to commencing system start-up. All coordination is the responsibility of the Contractor.

##### 3.02 START-UP

- A. Confirm that all equipment is properly installed and that the flow path through the new work is unobstructed.
- B. Make adjustments as necessary.

##### 3.03 START-UP DEMONSTRATION AND TESTING

- A. After all Work components have been constructed, field tested and started up in accordance with the individual specifications, a separate schedule will be prepared to perform the Start-Up Demonstration and Testing in the presence of the Engineer and the Owner. The demonstration shall be held upon completion of all systems at a date to be agreed upon in writing with the Owner.

- B. Acceptability of the Work's performance will be based on the Work performing as specified, under these actual and simulated operating conditions as defined in the Contract Documents. The intent of the start-up demonstration and testing is for the Contractor to demonstrate to the Owner and the Engineer the Work will function as a complete and operable system under normal operating conditions and is ready for acceptance.
- C. Certificate of Completed Demonstration: Submit five (5) copies of Demonstration Certification memo signed by the Contractor, Subcontractor and Owner and insert one copy in each Operation and Maintenance Manual.
- D. Training shall be scheduled and upon successful startup and demonstration testing to the resulting in approval of the demonstration certification, the Contractor shall provide training to the Owner and Engineer. The training shall be held upon completion of all systems at a date to be agreed upon in writing with the Owner. Videotaping of training shall be conducted in accordance with Section 01380 and other applicable equipment specifications.

EQUIPMENT STARTUP AND DEMONSTRATION CHECKLIST

PROJECT: \_\_\_\_\_  
 OWNER: \_\_\_\_\_  
 ENGINEER: \_\_\_\_\_  
 CONTRACTOR: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 STRUCTURE: \_\_\_\_\_  
 EQUIPMENT DESCRIPTION: \_\_\_\_\_  
 VENDOR: \_\_\_\_\_  
 REPRESENTATIVE: \_\_\_\_\_ INIT.: \_\_\_\_\_  
 STARTUP DEMONSTRATION DESCRIPTION: \_\_\_\_\_  
 COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

ACCEPTABLE:\_\_\_ PARTIALLY ACCEPTABLE:\_\_\_ NON-ACCEPTABLE:\_\_\_\_\_

ATTENDEES:

<u>NAME</u>	<u>AFFILIATION</u>	<u>DATE</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

EQUIPMENT TRAINING CHECKLIST

PROJECT: \_\_\_\_\_  
OWNER: \_\_\_\_\_  
ENGINEER: \_\_\_\_\_  
CONTRACTOR: \_\_\_\_\_  
DATE: \_\_\_\_\_  
STRUCTURE: \_\_\_\_\_  
EQUIPMENT DESCRIPTION: \_\_\_\_\_  
VENDOR: \_\_\_\_\_

REPRESENTATIVE: \_\_\_\_\_ INIT.: \_\_\_\_\_

# of training days required: \_\_\_\_\_ # received: \_\_\_\_\_

TRAINING DEMONSTRATION DESCRIPTION: \_\_\_\_\_

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ATTENDEES:

<u>NAME</u>	<u>AFFILIATION</u>	<u>DATE</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

**EQUIPMENT DOCUMENTATION  
AND SPARE PARTS CHECKLIST**

(To be turned over upon final acceptance of equipment)

<b>Item/Equipment</b>							
<b>Spec Section #</b>							
<b>Submittal #</b>							
<b>Acceptance Date</b>							
<b>Training Date</b>							
<b>O &amp; M (Date Submitted)</b>							
<b>Spare Parts (Desc./ Date Received)</b>							

END OF SECTION

## SECTION 01700

### CONTRACT CLOSEOUT

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: Comply with requirement stated in Conditions of the Contract and in Specifications for administrative procedures in closing out the Work.
- B. Related Requirements Described Elsewhere:
  - 1. Start-Up: Section 01657
  - 2. Cleaning: Section 01710.
  - 3. Project Record Documents: Section 01720.
  - 4. Operating and Maintenance Data: Section 01730.
  - 5. Warranties and Bonds: Section 01740.

##### 1.02 SUBSTANTIAL COMPLETION

- A. The Work will not be substantially complete, and Contractor may not request substantial completion inspection unless the following submittals and work is completed:
  - 1. All Operation and Maintenance manuals have been submitted and approved to the requirements of Section 01730.
  - 2. All equipment has been checked-out by the equipment manufacturer and Certificates of Manufacturer's Check-Out has been submitted as required by Section 01657.
  - 3. All start-up and demonstration testing completed and Certificates of Completed Demonstration submitted to the requirements of Section 01650.
  - 4. Project Record Documents are complete and have been submitted and reviewed to the requirements of Section 01720.
  - 5. All training of Owner's personnel completed.
  - 6. All areas to be used and occupied are safe, operable in automatic and complete.

7. All building occupancy certificates have been issued by the appropriate building permitting agency.
  8. All painting, finishes, fencing, cleanup, final grading, grassing, planting, sidewalk construction, and paving shall have been completed and ready for inspection.
  9. All deficiencies noted on inspection reports or nonconformances are corrected or the correction plan approved.
- B. When the conditions of paragraph 1.02 A. are met the Contractor shall submit to the Engineer:
1. A written notice that he considers the Work, or portion thereof, is substantially complete, and requests an inspection.
  2. A punchlist of items to be corrected. (Uncompleted work which is not related to the safe, effective, efficient use of the Project may be allowed on the punchlist with the Engineer's approval.)
- C. Within a reasonable time after receipt of such notice, the Engineer will make an inspection to determine the status of completion.
- D. 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 another written notice of substantial completion to the Engineer.
  3. The Engineer will within reasonable time, reinspect the Work. The Contractor will be liable for reinspection fees as described in paragraph 1.04, herein.
- E. When the Engineer finds that the Work is substantially complete, he will:
1. Schedule a walk-through of the facility to include the Owner. Engineer shall determine the completeness of the punchlist and readiness of the facility for occupancy by the Owner.
  2. Prepare and deliver to Owner a tentative Certificate of Substantial Completion with the tentative punchlist of items to be completed or corrected before final inspection.

3. 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, he 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. Any incomplete work allowed on a punchlist must be reinspected upon completion and any deficiencies found will be added to the punchlist.

### 1.03 FINAL INSPECTION

- A. Prior to Contractor's request for a final inspection the following submittals and work must be complete:
  1. Project Record Documents must be approved.
  2. All spare parts and maintenance materials must be suitably delivered to the Owner per the requirements of the Technical Sections of the Specifications.
  3. Contractor to submit evidence of compliance with requirements of governing authorities.
- B. After satisfying the requirements of paragraph 1.03 A. and when Contractor considers the Work complete, he shall submit written certification that:
  1. Contract Document requirements have been met.
  2. Work has been inspected for compliance with Contract Documents.
  3. Work has been completed in accordance with Contract Documents.
  4. Equipment and systems have been tested in the presence of the Owner's representative and are operational.
  5. All punchlist items have been corrected or completed and the Work is ready for final inspection.
- C. The Engineer will, within reasonable time, make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
- D. 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 another written certification to the Engineer that the Work is complete.

3. The Engineer will, within a reasonable amount of time, reinspect the Work and the Contractor shall be liable for reinspection fees as described in paragraph 1.04, herein.
- D. When the Engineer finds that the Work is acceptable under the Contract Documents, the Contractor may make closeout submittals.

#### 1.04 REINSPECTION FEES

- A. Should the Engineer perform reinspections due to failure of the Work to comply with the claims of status of completion made by the Contractor:
1. Contractor will compensate the Owner 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

- A. Warranties and Bonds: To requirements of Section 01740.
- B. Evidence of Payment and Release of Liens: To requirements of General and Supplementary Conditions.
- C. Certificate of Insurance for Products and Completed Operations.

#### 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 or written amendment.
    - b. Allowances.
    - c. Unit prices.
    - d. Deductions for uncorrected work.

- e. Penalties and bonuses.
  - f. Deductions for liquidated damages.
  - g. Deductions for reinspection payments.
  - h. Other adjustments.
- 3. Total Contract Sum, as adjusted.
  - 4. Previous payments.
  - 5. Sum remaining due.
- C. Engineer will prepare a final Change Order, reflecting approved adjustments 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 requirements stated in the Conditions of the Contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01710

### CLEANING

#### PART I - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: Execute cleaning, during the progress of Work and at completion of the Work.

##### 1.02 DISPOSAL REQUIREMENTS

- A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations and anti-pollution laws.

#### PART II - PRODUCTS

##### 2.01 MATERIALS

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

#### PART III - EXECUTION

##### 3.01 DURING CONSTRUCTION

- A. Execute daily cleaning to keep the Work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations or personal activities.
- B. Provide on-site containers for the collection of waste materials, debris and rubbish.
- C. Remove waste materials, debris and rubbish from the site periodically, or as directed by the Owner and dispose of at legal disposal areas away from the site.

### 3.02 DUST CONTROL

- A. The Contractor shall employ construction techniques that minimize the production and distribution of dust.
- B. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.
- C. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly-coated surfaces.

### 3.03 FINAL CLEANING

- A. Employee skilled workman for final cleaning.
- B. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces.
- C. Prior to final completion, or Owner occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces and all work areas, to verify that the entire Work site is clean.

END OF SECTION

## SECTION 01720

### PROJECT RECORD DOCUMENTS

#### PART 1 - GENERAL

##### 1.01 REQUIREMENTS INCLUDED

- A. Maintain at the site for the Owner one record copy of:
  - 1. Drawings
  - 2. Specifications
  - 3. Addenda
  - 4. Change Orders and other modifications of the contract
  - 5. Engineer's Field Orders or written instructions
  - 6. Approved Shop Drawings
  - 7. Field Test records
  - 8. Construction photographs, preconstruction videos, and pipeline videos.
  - 9. Preliminary as-built drawings

##### 1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Store documents and samples in Contractor's field office apart from documents used for construction.
  - 1. Provide files and racks for storage of documents.
  - 2. Provide locked cabinet or secure storage space for storage of samples.
- B. File documents and samples in accordance with CSI format with section numbers as provided herein.
- C. Maintain documents in a clean, dry, legible, condition and in good order. Do not use record documents for construction purposes.
- D. Make documents and samples available at all times for inspection by the Engineer.

- E. As a prerequisite for monthly progress payments, the Contractor shall provide the currently updated "Record Documents" for review by the Engineer and Owner.

#### 1.03 MARKING DEVICES

- A. Provide felt tip marking pens for recording information in the color code designated by the Engineer.

#### 1.04 RECORDING

- A. Label each document. "PROJECT RECORD" in neat large printed letters.
- B. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.
- C. Drawings: Legibly mark to record actual construction:
  1. Depths of various elements of foundation in relation to finish first floor datum.
  2. All underground piping with elevations and dimensions. Change to piping location. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements. Actual installed pipe materials, class, etc.
  3. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.
  4. Field changes of dimensional and detail.
  5. Changes made by Field Order or by Change Order.
  6. Details not on original contract drawings.
  7. Equipment and piping relocations.
  8. Major architectural and structural changes including relocation of doors, windows, etc.
  9. Architectural schedule changes according to Contractor's records or shop drawings.
    - a. Contractor shall provide copies of all such recordings to the Contractor's surveyor for incorporation into the preliminary and final as-builts drawings.

- D. Specifications and Addenda: Legibly mark each section to record:
  - 1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
  - 2. Changes made by Field Order or by Change Order.
- E. Shop Drawings (after final review and approval): Provide four (4) sets of record drawings for each process equipment, piping, electrical system and instrumentation system.

#### 1.05 SUBMITTAL

- A. Accompany each 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 of his authorized representative
- B. Preliminary As-built Drawings: The Contractor shall submit to the Engineer two (2) paper copies of preliminary as-built drawings prepared and signed/sealed by the Contractor's surveyor with each monthly progress payment request. Preliminary as-built drawings shall conform to the requirements of final as-built drawings and shall represent the completed work to date. Preliminary as-built drawings shall include all work which the Contractor is requesting to be paid for.
- C. Final As-built Drawings: Upon project closeout and as a prerequisite to the final pay request, the Contractor shall submit to the Engineer final as-built drawings Administrative Code, pursuant to Section 472.027 of the Florida Statutes. The Engineer shall supply the Contractor copies of AutoCad files and/or mylar sepias of the original construction plans for the Contractor's use in the as-built drawing preparation. Final as-built drawings shall include all work which the Contractor is requesting to be paid for. The final as-built drawing submittal shall include:
  - 1. Six (6) sets of paper plans and one (1) set of mylar drawings signed and sealed by a professional land surveyor licensed in the State of Florida and computer floppy disk(s) or CD(s) containing AutoCad, version 14, drawing files.

2. AutoCad drawing files shall include as-built information on layers separate from the original drawing layers and shall be named descriptively to represent the as-built features. (i.e.- Layer “wat ab” and “wat ab txt” for water as-built linework and text, respectively.) Drawing entities are to be shown on the correct layer. All as-built entities shall have color and line type set “bylayer”. Text sizes shall be relative to the plotted scale. Additional details or exploded views shall be include to accurately and fully represent the as-built conditions.
3. Certification by surveyor that the as-built information shown is accurate and that all improvements shown were constructed within or on public rights-of-way, easements or property specifically owned by the Owner. Certification shall be to the Owner, Engineer and St. Johns River Water Management (if applicable.)
4. No linework and text shall be erased from the original design (construction) drawings during the as-built drawing preparation. Original linework or text shall be circled if accurate or stricken (not erased) if not with the accurate information noted/shown. New linework and text shall be provided to accurately show the as-built information for the constructed improvements. Revisions to design dimensions alone will not be permitted.
5. Pressure Pipeline and Utility Conduit Improvements: For utility improvement projects, horizontal locations of the constructed pipelines with respect to the right-of-way lines or other readily visible, permanent features at 100 foot minimum intervals and at critical locations such as road intersections shall be shown. For treatment plant and pump station improvements, horizontal locations shall be provided at 20 foot intervals. Vertical locations of the constructed pipelines by elevation of centerline of pipe for above ground/exposed pipe or with respect to finished grade over buried pipe shall be shown at 100 feet minimum intervals. (i.e. final cover) For underground piping, all valves, blow-offs, stub-outs, pigging stations, fire hydrants, backflow preventers and services shall be located horizontally in relation to readily visible, permanent features with three way horizontal dimensions less than 100 feet, each. Three way dimensions to all buried fittings on treatment plant and pump station improvement projects shall be provided. If adequate features are not available, a station and offset dimensioning system can be used if prior approval is obtained from the Engineer. For above ground/exposed pipe, as-built dimensions between fittings or flanges shall be provided. Separations between Asanitary hazards@ to potable water and reclaimed water mains per FDEP shall be shown.
6. Gravity Pipeline Improvements: Show elevations for all inverts, manhole tops, inlet throats/weirs, grate tops, etc. Show size and type of each

structure. As-built length, size and type of pipes between the structures shall be shown. All service laterals and cleanouts shall be located horizontally to readily visible, permanent features with three way horizontal dimensions less than 100 feet, each. If adequate features are not available, a station and offset dimensioning system can be used if prior approval is obtained from the Engineer. A labeling and dimension table scheme is recommended for the three way or station/offset dimensioning. (i.e.-constructed feature labeled as “A”, permanent feature labeled as “B”, “A”-“B” dimension shown in table for distance measured between the two. Use continuous labeling and complete single table per plan sheet.) Separations between gravity “sanitary hazards” to potable water and reclaimed water mains per FDEP shall be shown.

7. Roadway Improvements: Elevation, size and location of swales, ditches, gutter flow-lines, edge of pavement, and road crown on both sides of the road if applicable shall be provided at 100 foot minimum intervals and at critical areas such as intersections and inlets/flumes. As-built points of curvature, tangent and vertical intersection, along with radii of road alignment, intersecting streets and driveways and other alignment information shall be provided.
8. Stormwater Improvements: The limits, slopes and bottom depths of stormwater ponds, swales and other retention areas shall be provided. All stormwater piping information shall conform to the Gravity Pipeline Improvement requirements. Size, type, material, and elevations of all stormwater structures, including appurtenances such as weirs, orifices, skimmer plates, etc. shall be shown. As-built information shall conform to St. Johns River Water Management District requirements.
9. Treatment Facility Improvements: Location, size, number, and type of treatment equipment and structures shall be shown. Applicable requirements of as-built information listed herein for similar improvements shall be required.
10. Building Improvements: Finished floor elevations, ceiling heights, building locations, wall opening dimensions, equipment (electrical, mechanical, plumbing) locations, etc. shall be provided. Change of material shall be specifically noted as such.
11. Landscaping Improvements: Number, type, size, and general location of installed plant material shall be provided. Change of material shall be specifically noted as such. Location of irrigation meters, services, manual valves, automatic valves, controllers, rain shut off switches, etc. shall be shown. Changes to the designed irrigation system shall be shown.

12. Other Improvements: Changes from the original design of other improvements such as electrical, mechanical and structural improvements shall be noted as such on the as-built drawings with the size, number, type and location of the constructed/installed improvements noted.
13. Contractor may be required to reimburse the Owner for services rendered by the Engineer for review of multiple resubmittals per SC-6.17, 1. of Section 00800, Supplementary Conditions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01730

### OPERATING AND MAINTENANCE DATA

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. Scope of Work:

1. Compile product data and related information appropriate for Owner's maintenance and operation of products furnished under Contract.
2. Prepare operating and maintenance data as specified in this Section and as referenced in other pertinent sections of the Specifications.
3. Instruct Owner's personnel in maintenance of products and in operation of equipment and systems.

###### B. Related Requirements Described Elsewhere:

1. Section 01340: Shop Drawings
2. Section 01720: Project Record Documents
3. Section 01740: Warranties and Bonds

##### 1.02 QUALITY ASSURANCE

###### A. Preparation of data shall be done by personnel:

1. Trained and experienced in maintenance and operation of described products.
2. Familiar with requirements of this Section.
3. Skilled as a technical writer to the extent required to communicate essential data.
4. Skilled as draftsman competent to prepare required drawings.

### 1.03 FORM OF SUBMITTALS

- A. Prepare data in form of an instructional manual for use by Owner's personnel.
- B. Hard Copy Format:
  - 1. Size: 8½" x 11 inches
  - 2. Paper: 20 pound minimum, white, for typed pages.
  - 3. Text: Manufacturer's printed data, or neatly typewritten
  - 4. Drawings:
    - a. Provide reinforced punched binder tab, bind in with text.
    - b. Reduce larger drawings and fold to size of text pages but not larger than 14 inches x 17 inches.
  - 5. Provide fly-leaf for each separate product, or each piece of operating equipment.
    - a. Provide typed description of products and major component parts of equipment.
    - b. Provide indexed tabs
  - 6. 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.
  - 7. Binders:
    - a. Commercial quality three-post binders with durable and cleanable plastic covers.
    - b. Maximum post width: 2 inches.
    - c. When multiple binders are used, correlate the data into related consistent groupings.

C. Electronic Format Copy

1. Provide electronic copy of operation and maintenance data on CD/DVD. File(s) should be organized/named to correspond with hard copy.

1.04 CONTENT OF MANUAL

A. Neatly typewritten table of contents for each volume, arranged in systematic order.

1. Contractor, name of responsible principal, address and telephone number.
2. A list of each product required to be included, indexed to content of the volume.
3. List, with each product, name, address and telephone number of:
  - a. Subcontractor or installer
  - b. A list of each product required to be included, indexed to content of the volume.
  - c. Identify 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 specified product.
2. Annotate each sheet to:
  - a. Clearly identify specific product or part installed
  - b. Clearly identify data applicable to installation
  - c. Delete references to inapplicable information.

C. Drawings:

1. Supplement product data with drawings as necessary to clearly illustrate:
  - a. 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 consistent format under separate headings for different procedures.
  2. Provide logical sequence of instructions of each procedure.
- E. Copy of each warranty, bond and service contract issued.
1. Provide information sheet for Owner's personnel, give:
    - a. Proper procedures in event of failure
    - b. Instances which might affect validity of warranties or bonds.

#### 1.05 MANUAL FOR MATERIALS AND FINISHES

- A. Submit four copies of the complete manual in final form.
- B. Content: for architectural products, applied materials and finishes:
1. Manufacturer's data, giving full information on products
    - a. Catalog number, size, and composition
    - b. Color and texture designations
    - c. Information required for reordering special manufactured products
  2. Instructions for care and maintenance
    - a. Manufacturer's recommendation for types of cleaning agents and methods.
    - b. Cautions against cleaning agents and methods which are detrimental to product.
    - c. Recommend schedule for cleaning and maintenance.
- C. Content, for moisture protection and weather-exposed products:

1. Manufacturer's data, giving full information on products.
    - a. Applicable standards
    - b. Chemical composition
    - c. Details of installation
  2. Instructions for inspection, maintenance and repair
- D. Additional requirements for maintenance data: Respective sections of the Specifications.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01740

### WARRANTIES AND BONDS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. Scope of Work:

1. Compile specified warranties and bonds as specified in these Specifications.
2. Co-execute submittals when so specified.
3. Review submittals to verify compliance with Contract Documents.
4. Submit to Engineer for review and transmittal to Owner.

###### B. Related Work Described Elsewhere:

1. Instructions to Bidders: Bid Bonds
2. Performance Bond and Payment Bond
3. Labor and Material Payment Bond: Section 00645

##### 1.02 SUBMITTAL REQUIREMENTS

- A. Assembly warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors.
- B. Number of original signed copies required: Two each.
- C. Table of Contents: Neatly typed, in orderly sequence. Provide complete information for each item.
  1. Product of work item
  2. Firm, with name of principal, address and telephone number
  3. Scope
  4. Date of beginning of warranty, bond or service and maintenance contract
  5. Duration of warranty, bond or service maintenance contract.

6. Provide information for Owner's personnel:
  - a. Proper procedure in case of failure.
  - b. Instances which might affect the validity of warranty or bond.
7. Contractor, name of responsible principal, address and telephone numbers.

### 1.03 FORM OF SUBMITTALS

- A. Prepare in duplicate packets
- B. Format:
  1. Size 8 ½" x 11 inches, punch sheets for standard three-post binder.
    - a. Fold larger sheets to fit into binders.
  2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS". List:
    - a. Title of Project
    - b. Name of Contractor
- C. Binders: Commercial quality, three-post binder, with durable and cleanable plastic covers and maximum post width of two inches.

### 1.04 WARRANTY SUBMITTALS REQUIREMENTS

- A. For all major pieces of equipment, submit a warranty from the equipment manufacturer. Manufacturer's warranty period shall be concurrent with Contractor's for one (1) year, unless otherwise specified, commencing at the time of final acceptance by Owner.
- B. Contractor shall be responsible for obtaining certificates for equipment warranty for all major equipment which has at least a 1 hp motor or which lists for more than \$1,000. Engineer reserves the right to request warranties for equipment not classified as major. Contractor shall still warrant equipment not considered to be "major" in the Contractor's one-year warranty period even though certificates of warranty may not be required.

- C. In the event that the equipment manufacturer or supplier is unwilling to provide a one-year warranty commencing at the time of Owner acceptance, the Contractor shall obtain from the manufacturer a two (2) year warranty commencing at the time of equipment delivery to the job site. This two-year warranty from the manufacturer shall not relieve the Contractor of the one-year warranty starting at the time of Owner acceptance of the equipment.
- D. Owner shall incur no labor or equipment cost during the guarantee period.
- E. Guarantee shall cover all necessary labor, equipment and replacement parts resulting from faulty or inadequate design, improper assembly or erection, defective workmanship and materials, leakage, breakage or other failure of all equipment and components furnished by manufacturer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01800

### MISCELLANEOUS WORK AND CLEANUP

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. Scope of Work:

1. This Section includes operations which cannot be specified in detail as separate items but can be sufficiently described as to the kind and extent to work involved. The Contractor shall furnish all labor, materials, equipment and incidentals to complete the work under this Section.
2. The work of this Section includes, but is not limited to, the following:
  - a. Restoring of driveways and fences.
  - b. Cleaning up.
  - c. Incidental work.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- ###### A.
- Materials required for this Section shall be of the same quality as materials that are to be restored. Where possible, the Contractor shall reuse existing materials that are removed and then replaced.

#### PART 3 - EXECUTION

##### 3.01 RESTORING OF DRIVEWAYS, FENCES, AND SIDEWALKS

- ###### A.
- Existing public and private driveways and sidewalks disturbed by the Contractor shall be replaced. Paved drives shall be repaved to the limits and thickness existing prior to construction. Gravel drives shall be replaced and regraded. Concrete driveways and sidewalks shall be replaced.
- ###### B.
- The Contractor shall remove, store and replace existing fences during construction. Only the sections directed by the Engineer shall be removed. If any section of fence

is damaged due to the Contractor's negligence, it shall be replaced with fencing equal to or better than that damaged, and the work shall be satisfactory to the Engineer.

3.02 CLEAN UP

- A. The Contractor shall remove all construction material, buildings, equipment and other debris remaining on the job as the result of construction operations and shall render the site of the work in a neat and orderly condition. All suitable excess excavated material shall remain on site.

3.03 INCIDENTAL WORK

- A. Do all incidental work not otherwise specified, but obviously necessary for the proper completion of the contract as specified and as shown on the Drawings.

END OF SECTION

## SECTION 02000

### SOIL BORINGS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Soil boring information is included in a report prepared for the Owner and the Engineer by the Geotechnical Consultant. The report is reproduced in the contract documents.
- B. The boring data sheet has been used by the Engineer for the design of the foundations for the structures included in the Project.
- C. The subsurface information contained therein was obtained for design purposes and may not be an adequate representation of actual conditions for project construction. Information shown, including water levels, represents existing conditions at the specific boring locations at the time the borings were made. All risks resulting from use or interpretation of the subsurface data shown shall be borne by the Contractor.
- D. This data is available for information only and may be useful as a guide in estimating and planning the work.
- E. If additional subsurface information is required by the Bidder it shall be the Bidder's responsibility to obtain such data.
- F. Refer to the GENERAL CONDITIONS for further explanation of subsurface conditions.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

## SECTION 02100

### EXCAVATION, BACKFILL AND EMBANKMENT

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. The work covered by this section and required by this Contract includes the completion of all excavation, backfilling and embankment to the lines and grades indicated by the drawings, as further specified below, and necessary to the following operations:
1. Stripping, storing and replacing topsoil;
  2. Excavation and backfill for pipe trenches;
  3. Excavation and embankment for road, grading and drainage of the site;
  4. Excavation and backfill for buildings and structures; and
  5. Borrow excavation.

##### 1.02 CHARACTER OF MATERIAL.

- A. The Contractor must satisfy himself regarding the character and amount of loam, clay, sand, quicksand, muck, gravel, rock, water and all other material to be encountered in the work to be performed.

##### 1.03 DESCRIPTION

- A. The Contractor shall excavate, protect and backfill all foundations, trenches, tunnels and other excavations that may be necessary for completing the work to be done under this Contract. All excavation shall be in open cuts, except where and to such extent as the Engineer may authorize or direct that the same be done in tunnel, or where such is specified in the Special Requirements or Contract drawings. Trenches may, in general, be excavated and backfilled either by machinery, or by hand as the Contractor may elect; provided, however, that the Engineer shall be empowered, wherever he shall decide that such necessity exists, to direct that hand excavation be employed; and, provided, further that backfilling by hand shall be done to the extent hereinafter specified. The Contractor shall have no claim for extra compensation due to the fact that hand, instead of machine, excavation may be necessary from any cause whatever.
- B. The Contractor shall perform all excavation of every description and of whatever substances encountered, to the lines and grades or depths indicated by the drawings, as specified herein, or as directed by the Engineer. Embankments shall be prepared in accordance with the Specifications, and as necessary to bring the ground surface to the subgrade elevation for roads and to finished grade elevations for other areas as shown on the drawings, or directed by the Engineer. All excavated material not

required for backfill or embankment shall be removed and wasted or otherwise disposed of as directed or specified.

- C. The term "subgrade" as used herein shall have the meaning given below:
1. The bed of a trench prepared as specified to receive pipes or other conduits;
  2. The area upon which the lower surface of roadway paving, walks, gutters, or curb rests;
  3. The surface of excavation or embankment areas prepared to receive topsoil; and
  4. The areas upon which rest the planned bottom of footings, foundations, or slabs.

## PART 2 - MATERIALS

### 2.01 TOPSOIL

- A. Stripping. The area from which topsoil is to be stripped and the locations where it is to be stored shall be as shown on the drawings or as specified below. The topsoil shall be stripped to a depth of not less than six (6) inches. On all areas where any type of grading is to be performed, including the areas within the lines of buildings and structures, the topsoil shall be carefully removed and spread either on areas already graded or prepared for topsoil, or in stockpiles conveniently located to the areas which are later to receive application of topsoil.
- B. Spreading. On areas intended to receive topsoil, the compacted subgrade shall be scarified to a depth of two (2) inches for bonding topsoil with subsoil. The topsoil shall then be evenly spread, compacted and graded to the finished elevations shown on the drawings or as specified by the Engineer. Compaction shall be effected by a single pass of an approved roller.

### 2.02 REMOVAL AND STORAGE OF MATERIAL

- A. In locations where the working space is limited, the material excavated from the first one hundred (100) feet of any trench, or from such additional length as may be required, shall upon order of the Engineer, be removed at the Contractor's own cost and expense, as soon as excavated. The materials subsequently excavated shall be used to refill the trench. In no case will the Contractor be allowed to cast excavated material beyond curb of right-of-way lines, or on sidewalks or lawns, and the failure or refusal of the Contractor to comply with this requirement shall be sufficient cause for the Engineer to stop all work under the Contract.

- B. In case more material is excavated from any trench than can be backfilled over the completed sewer or can be stored within the limits of the right-of-way, leaving space for the traffic and drainage as herein provided, the excess material shall be removed to some convenient place, provided by the Contractor. The Contractor shall at his own cost and expense bring back as much of the material so removed, as may be required to properly backfill the trench, if of the proper kind; or, if so directed by the Engineer, the Contractor shall, at his own cost and expense, furnish such other suitable material as may be necessary.
- C. When it is necessary to haul soft or wet material over the streets, the Contractor shall provide suitable tight vehicles, or a pattern approved by the Engineer for this purpose.

### 2.03 SHEETING, BRACING AND SHORING

- A. The Contractor shall furnish the material for, and do all timber shoring, bracing and sheeting necessary to perform and protect the excavation, and as required by the Engineer to protect the work, other structures, the public, and the Contractor's employees. If trench protection is necessary, per OSHA requirements, the Contractor shall account for the anticipated expense in the appropriate bid item, or in the unit cost for pipe installed, or a combination of both. If the Engineer deems that sheeting, bracing, or shoring is necessary, it shall be supplied by the Contractor at no additional expense to the Owner. Such sheeting, etc. may be removed as the work progresses, but where, in the opinion of the Engineer, damage may result through removal; it shall be left in place with payment therefore made as hereinafter provided. The right of the Engineer to order sheeting, etc. left in place shall not render the issuance of such order obligatory on the part of the Engineer.
- B. All sheeting, etc. shall be arranged so that it may be withdrawn, as the trenches are backfilled, without injury to the pipe and its appurtenances, and without injury to or settlement of adjacent structures and pavements. All voids caused by withdrawal shall be immediately filled with sand or other satisfactory material and compacted by ramming or other method satisfactory to the Engineer.
- C. No timber sheeting, bracing or shoring shall be left within eighteen (18) inches of any natural ground surfaces or within twelve (12) inches of the subgrade of any rigid or flexible type pavement, or railroad roadbed. In any trench shoring system no vertical member shall remain directly over the pipe and no horizontal member shall remain within twelve (12) inches of any pipe. After backfilling is started, no sheeting shall extend below the horizontal diameter of the pipe without the Engineer's approval. Sheeting left in place shall be cut off at such point as the Engineer may order, and the portions cut off shall be removed from the work.

- D. If the Engineer determines that the material furnished is not of proper size or quality, or not properly placed, the Contractor shall furnish and place other and satisfactory material in an acceptable manner, and shall not be entitled to additional compensation for such corrective work.

### PART III - EXECUTION

#### 3.01 ORDER OF WORK

- A. The Contractor shall submit a progress schedule as specified in Article 2.40 and shall carry on his work in strict accordance therewith. Deviations from the progress schedule may be made only with the approval of the Engineer.
- B. Manholes shall be constructed either at the same time as the main sewer or immediately after its completion.

#### 3.02 SEWER LINES AND GRADES. Sewer lines and grades shall be laid out and maintained during construction in the following manner.

- A. Prior to the commencement of trench excavation, the Contractor shall prepare and submit to the Engineer for approval, detailed cut sheets provided by the Contractor's surveyor. The surveyor shall be registered in the State of Florida. Cut sheet shall show; the beginning and ending of manholes; the distance between manholes; the grade, size and type of line, the depth of cut; etc. The form of cut sheets shall be satisfactory to the Engineer. All expense for the preparation of cut sheets shall be borne by the contractor and be included in the unit price per foot of pipe. Cut sheets must be approved by the Engineer in writing before pipe laying operations may be permitted. It shall be the responsibility of the Contractor to prepare cut sheets far enough in advance of his anticipated trenching schedule so that avoidable delay in the work will not occur.
- B. Before beginning the excavation for any run of main sewer, the Contractor's forces, under the direction of the Engineer, shall:
  - 1. Set control points for line and grade as given on the Drawings or as otherwise determined by the Engineer. In unpaved or unsurfaced areas, these points shall be placed on the top of stakes securely driven into the ground. In paved areas, there may be spikes driven into the paving or crosses cut into the paving, and in either case, enclosed in a painted circle. Stakes or points shall be sufficiently offset from the centerline so as to be undisturbed during the excavation and pipe laying operations. The offset shall be on the side of the centerline opposite to that on which excavation will be thrown.
  - 2. As the rough excavation is completed, the Contractor's surveyor shall place grade or batter boards of finished, straight lumber across the trench opposite each stake or point. The grade boards shall be securely supported so as not to be subject to accidental displacement. The top of each board shall be leveled

and set at the same distance above the sewer invert. A nail shall then be driven into the top of each board on the centerline of the sewer and each nail connected by a string line pulled taut.

3. The preparation of the final subgrade and the pipe laying shall then proceed in the manner specified herein, beginning at the manhole having the lower invert and working upgrade and using the string line as control for maintaining sewer grade and horizontal alignment. A straight wooden pole suitably marked and with a right-angled offset at the bottom to project past the bell of the pipe and rest upon the pipe invert, shall be used to check the vertical distance from string line to invert.
- C. The use of laser beams shall be acceptable as a method of controlling pipe alignment and grade.

### 3.03 WIDTH AND DEPTH OF TRENCHES

- A. From the subgrade elevation to an elevation at least twelve (12) inches above the top of the outside barrel of the pipe, the banks of trenches in all cases shall be excavated to vertical lines, and the trenches shall be not less than twelve (12) inches nor more than sixteen (16) inches wider nor more than eight (8) inches in width is provided on each side of the barrel of the pipe. If sheeting is required, the foregoing dimensions shall be applicable to the inside faces of the sheeting.
- B. From a point twelve (12) inches above the top of the outside barrel of the pipe to the surface, the banks of trenches in all streets, roads or highways, paved or unpaved, shall be kept as nearly vertical as possible, and in no case shall the width of trench at the top exceed the outside diameter of the pipe plus forty (40) inches. If the specified maximum width of trench cannot otherwise be maintained, the Contractor shall install temporary sheeting at his own cost and expense. Where sewers are to be constructed on rights-of-way or easements in open country, the specified maximum width of trench at the top may be exceeded only if the construction is kept entirely within the limits of the easements or rights-of-way and can be carried on without damage to adjoining property.
- C. Except at locations where excavation of rock or unsuitable material is required, care shall be taken not to excavate below the depths specified, when rock is encountered, it shall be removed to a depth six (6) inches below the outside bottom of the pipe at the barrel. When the material encountered at subgrade is unstable, it shall be removed from under the pipe and on each side of the pipe for a distance of one (1) diameter of the pipe. Such rock or unsuitable material excavation below subgrade shall be backfilled with moist clay, sand, bankrun gravel, or other suitable material compacted to the satisfaction of the Engineer, and the bed thus formed shaped as required above. In rock excavation, if trenches are shattered by blasting below the lines of excavation specified herein, the trench shall be refilled to subgrade with sand, well tamped earth, or concrete, if required by the Engineer, at the Contractor's expense. If earth trenches

are excavated beyond the specified depths, they shall be backfilled to the proper grade with suitable, thoroughly tamped material at the expense of the Contractor.

### 3.04 PREPARATION OF FOUNDATION

- A. In earth trenches, the bottom thereof shall be carefully rounded to fit the lower ninety degrees (90E) of the circumference of the pipe, i.e., so that one-fourth of the external circumference of the pipe will rest firmly on the undisturbed soil. Bell-holes shall be excavated to insure that the barrel of the pipe will rest for its entire length upon the trench bottom.
- B. Bell-holes shall be properly cut to provide free support of the pipe barrel and shall be directed by the Engineer. All irregularities and cavities, either in earth or rock excavation, in the bottom of trenches or tunnels, shall be filled up to a level which will support ninety degrees (90E) of the lower pipe circumference with selected material free from large gravel, rocks and stones, firmly compacted before pipe lines are laid therein.
- C. Where, in the opinion of the Engineer, the ground does not afford a sufficiently firm foundation, the Contractor shall construct a timber foundation, or shall excavate the trench to such increased depth as may be directed, and then shall bring up the bottom of the trench to the required level and form with such material and in such manner as the Engineer may direct.

### 3.05 CONCRETE CRADLE AND ENCASUREMENT

- A. The profiles generally indicate the approximate vertical limits where concrete cradle and encasement are necessary to support the anticipated loads on completed sewers for the widths of trench as required for each size and class of pipe, based on the crushing strength of the pipe.
- B. The Contractor is warned that if the trench widths or clearances between pipe and trench walls or face of sheeting, as specified above, are exceeded, he will be required to furnish in all locations at his own expense either concrete cradle or encasement as directed by the Engineer.
- C. It is anticipated that subsurface conditions may require a cradle for a portion of the project to provide an adequate foundation, even though the ultimate anticipated load on the pipe is less than the minimum crushing strength for sand bearing. The Contractor shall place the cradle or encasement at the location, and of the materials, as directed and required by the Engineer. The Contractor will not be paid for any cradle beyond the required widths of trench.
- D. All excavation made beyond the required limits shall be at the Contractor's expense.

### 3.06 LENGTH OF OPEN TRENCH

- A. The Engineer shall have the right to limit the amount of trench opened in advance of pipe laying and the amount of pipe laid in advance of backfilling, but in no case, except when leakage tests are required by the Engineer, shall these amounts exceed three hundred (300) feet and one hundred (100) feet, respectively. Trench excavation shall be fully completed, except for the shaping of the bottom of the trench, at least twenty (20) feet in advance of the pipe placement and shall be kept free from obstructions, except that at the close of work at night, or at the discontinuance of work, the pipe laying may be completed to within five (5) feet of the end of the open trench.
- B. The Engineer shall be empowered, at any time, to require the refilling of open trenches over completed pipe lines, if, in his judgment, such action is necessary, and the Contractor shall thereby have no claim for extra compensation even though to accomplish said refilling, he is compelled temporarily to stop excavation or other work at any place.
- C. If the work is stopped on any trench, for any reason except by order of the Engineer, and the excavation is left open for an unreasonable length of time (in the opinion of the Engineer) in advance of construction, the Contractor shall, if so directed, refill such trench at his own cost and shall not again open said trench until he is ready to complete the structure therein.

### 3.07 ACCOMMODATION OF TRAFFIC

- A. Streets shall not be unnecessarily obstructed and, unless the Engineer, in writing, shall authorize the complete closing of the street, the Contractor shall take such measures at his own expense as may be necessary to keep the street or road open and safe for traffic.
- B. The Contractor shall construct and maintain without extra compensation such adequate and proper bridges over excavations as may be necessary or as directed for the safe accommodation of pedestrians or vehicles. The Contractor shall furnish and erect without cost to the Owner substantial barricades at crossings of trenches, or along the trench, to protect the traveling public.
- C. The Contractor shall not obstruct fire hydrants.
- D. The roadway on one side of the line of work shall be kept open at all times.
- E. The streets, crosswalks and sidewalks shall be kept clean, clear and free for the passage of vehicles or pedestrians, unless otherwise authorized in writing by the Engineer. A straight and continuous passageway on sidewalks and over crosswalks, at least three (3) feet in width, shall be preserved free from all obstruction.

- F. Where deemed necessary, such additional passageway as may be directed shall be maintained free from obstructions.
- G. In narrow or congested streets or alleys, when so directed, the Contractor shall complete his work up to a point designated by the Engineer before opening the work ahead, in order to give access to garages and other places. The Contractor shall in all cases so arrange his work as to cause the least inconvenience to property owners consistent with the proper precaution of the work as determined by the Engineer.

### 3.08 ACCOMMODATION OF DRAINAGE

- A. Gutters, sewers, drains and ditches shall be kept open at all times for surface drainage. No damming or ponding of water in gutters or other waterways will be permitted, except where stream crossings are necessary and then only to an extent which the engineer shall consider necessary. The Contractor will be responsible for all clean-up to existing utilities caused by their activities.
- B. The Contractor shall not direct any flow of water across or over pavements except through approved pipes or properly constructed troughs and he shall, when so required at his own expense and cost, provide pipes or troughs of such sizes and lengths as may be required and place the same as directed.
- C. The grading in the vicinity of sewer trenches shall be controlled so that the ground surface is properly pitched to prevent water running into trenches.

### 3.09 PUMPING

- A. The Contractor shall keep all excavations free from water, at his own expense, while structural work is in progress, and to such extent as may be necessary while excavation work along is being carried on.
- B. The Contractor shall build all dams and other devices necessary for this purpose, including lowering the water table below trench bottom by well points and pumping, and provide and operate pumps of sufficient capacity for dewatering the excavations.
- C. He shall provide for the disposal of the water removed from excavation in such manner as shall not cause injury to the public health, to public or private property, to the work of other Contractors, to any portion of the work completed or in progress, or produce any impediment to the use of the highways, roads, lanes, and streets by the public.
- D. Any dewatering required shall be performed at the Contractor's expense. Payment for dewatering shall be included in the Contractor's bid prices for pipe or other structures requiring dewatering for installation. If holes made for installation of well points are installed in a roadway, shoulder, or under a structure, these holes shall be filled with lean grout prior to backfill and compaction. Any permits needed for dewatering shall be obtained and paid for by the contractor.

### 3.10 EMBANKMENT

- A. Where embankment is necessary to support the foundations of the pipe or structure, it shall be made to the height, width and slopes shown on the drawings, or as directed. The entire embankment, or such portion thereof as may be deemed necessary by the Engineer, shall be made prior to the construction of the sewer, structure, or the foundation thereof, at such time and in such order as the Engineer may direct; and the embankment, sewer, or structure, and appurtenances, which may be laid thereon or therein, shall be maintained by the Contractor, at his own cost and expense, until the completion of the period of one (1) year from and after the date of the Certificate of Completion and Acceptance.
- B. After carefully grubbing and clearing the ground, removing all loose rock and stone, and all muck and improper material, to such a depth as the Engineer may determine, the embankment shall be built up of good loam, gravel or sand, or other selected and approved material, free from all stone above four (4) inches diameter, and not containing in any place a proportion of stones exceeding one (1) part stone to three (3) parts earth.
- C. In cast material which is unsatisfactory for the foundation of any embankment is encountered, said material shall be removed to such depth, and for such length and width as may be directed by the Engineer. Payment for the removal of material unfit for the foundation of an embankment will be made at the price bid or stipulated per cubic yard for excavation below subgrade.
- D. The material for embankment shall be deposited in layers of not more than nine (9) inches in thickness; each layer shall be separately compacted by heavy, grooved iron rollers, or where such rollers cannot be used, by heavy paver's rammers. The embankment shall be watered during rolling, if so required. No breaks or irregularities in the distribution of the material or the formation of the layers will be allowed. The whole embankment shall be carried up evenly to the height given by the Engineer in such a manner as to make a compact and solid foundation. When pipe is to be laid in a fill, the embankment shall be brought to a height of at least one (1) foot above the proposed top of the pipe before the trench is excavated. The embankment shall then be excavated to the proper form and grade, and the sewer placed thereon; after which the embankment shall be carried up to a height of not less than three (3) feet above the top of the sewer, the material being placed and rolled or rammed in layers as above described.

### 3.11 BACKFILLING TRENCHES

- A. It is the intent of the following requirements for the backfilling of trenches to specify materials and methods which will:

1. Result in thorough compaction of the backfilled material without the displacement of the grade or alignment of the sewer line and its appurtenances, and
  2. Eliminate settlement of the backfilled material.
- B. If displacement of the sewer or settlement of the backfilled material does occur, it will be considered as conclusive evidence of improper workmanship or the inclusion of unsuitable materials or both, and it shall be the Contractor's responsibility, at his own expense, to remove and recompact the settled material and regrade and realign the sewer. During the course of the backfilling operation, the Engineer may, at any location or depth of trench, make tests to determine whether the Contractor's compaction operations are sufficient to meet the requirements specified below.
- C. The procedure of backfilling shall be as follows:
1. After the structure, pipe, or conduit and its appurtenances have been installed or constructed, the excavation, to a height of at least two (2) feet above the top of pipe or conduit, shall be refilled with clean earth deposited in four (4) inch layers and solidly rammed down and tamped around the pipe, or conduit and under it, with mechanical tampers and proper tools made for this purpose. The operation shall be done in such manner as not to disturb the structure. The area around the pipe shall be hand-tamped.
  2. The earth, to the height specified above, shall be carefully thrown in with hand shovels; under no condition shall any other means than hand shoveling, such as pushing in with heavy equipment be used.
  3. The remainder of the trench, except as described below, shall then be refilled evenly to the required height in layers, each layer not to exceed six (6) inches in thickness after compaction. Mechanical tampers shall be used so as to produce a density of backfill (as determined by weight) at the bottom of each layer of not less than ninety-five percent (95%) of the optimum density of that material based upon the AASHTO T-180 modified proctor. The earth shall be properly rammed as directed, and wetted as required as the work progresses.
  4. Care shall be taken to carry the fill up evenly on opposite side of the sewer, other trench excavations, and around the sides of all structures.
- D. If, in the opinion of the Engineer, the material being used for backfilling is of such character that satisfactory results cannot be obtained by tamping and ramming, the Contractor shall backfill and puddle the excavations in such manner and at such times as the Engineer may direct.

- E. If the material excavated is not clean earth, as above specified, the best of the materials excavated shall be used in backfilling, in position and manner as directed by the Engineer.
- F. In rock trenches, selected earth, sand or gravel shall be provided and used as backfill in the manner hereinbefore described to a height of two (2) feet above the top of the sewer. The backfill for the balance of the trench in all cases shall be of good earth, sand or gravel, which may contain stones not more than six (6) inches in largest dimensions, but not in proportion exceeding twenty percent (20%) of the total volume of backfill.
- G. No bulkheads, or retaining walls for the backfilling, will be allowed in the trenches over the sewer, except for temporary use.
- H. Should there be a deficiency of proper material for refilling the Contractor shall furnish acceptable material at his own cost and expense.
- I. No house ashes, putrescible refuse or other material of unsatisfactory character shall be used in refilling, and the Contractor shall not permit the trench to be used as a dumping ground for refuse.
- J. Testing of backfill in trenches shall be performed as deemed necessary by the Engineer or his representatives; the Contractor will supply and pay for the testing.

### 3.12 BORROW EXCAVATION

- A. In cases where the amount of embankment exceeds the amount of excavation within the limits of the site as indicated by the Drawings, and where material is not available from other sources of contracts, the Contractor shall obtain sufficient, suitable material from borrow pits located entirely beyond the limits of the site unless the Engineer gives written permission to obtain such material from an area within the site.
- B. The Contractor shall notify the Engineer sufficiently in advance of borrow excavation requirements to permit the Engineer to determine necessity and to view the proposed borrow pit.
- C. Borrow obtained from within the site shall be removed to uniform lines and grades satisfactory to the Engineer, and in such a manner as will not detract from the general appearance of the improvement and shall not create unsatisfactory conditions.
- D. All borrow pits shall be stripped of brush, roots, grass and other vegetation prior to removal of material for embankment purposes.

### 3.13 BUILDINGS AND STRUCTURES

#### A. Excavation.

1. All excavation for buildings and structures shall be performed in the dimensions indicated on the Drawings. If suitable bearing is not encountered at the planned footing or foundation elevations, the excavation shall be carried to such elevations as are approved by the Engineer.
2. Prior to construction of foundations, the excavation shall be inspected by the Engineer and no foundation work shall be started prior to the Engineer's approval of the excavation. Care shall be exercised to avoid excavation below the depths indicated on the Drawings or as directed by the Engineer.
3. Where excavation is made below plan elevation or below elevations directed by the Engineer. Where excavation is made below plan elevation or below elevations directed by the Engineer, through the fault of the Contractor, the excavation shall be restored to the proper elevation in the manner described for backfill below, or the heights of walls or footings shall be increased, as may be directed by the Engineer, at the expense of the Contractor.

#### B. Drainage.

1. Grading in the vicinity of structures shall be controlled to prevent water running into excavated areas. Any accumulation of water in excavations shall be removed by pumping or other means at the Contractor's expense.

#### C. Backfill.

1. After completion of footings and walls, and the removal of forms, and prior to backfilling, the excavation shall be cleaned of all trash and debris.
2. Backfill material shall consist of the excavation or other materials free from trash, lumbar or other debris. It shall be placed in horizontal layers not exceeding six (6) inches in depth, moistened if required and compacted by hand or mechanical tampers to a density to prevent excessive settlement.

### 3.14 RESPONSIBILITY FOR CONDITION OF EXCAVATION

- A. The Contractor shall be responsible for the condition of all excavations made by him. All slides and cave-ins shall be removed without extra compensation, at whatever time and under whatever circumstances they may occur.

- B. The failure of the Engineer to order the use of bracing or sheeting or a better quality, grade or section, or larger sizes of steel or timber, or to order sheeting, bracing, struts, or shoring to be left in place, or the failure to give orders or directions as to the manner or methods of placing or driving sheeting, bracing jacks, wales, rangers, or other members, shall not in any way or to any extent relieve the Contractor of any responsibility concerning the condition of excavation or of any of his obligations under the Contract; nor shall any delay, whether caused by any action or want of action on the part of the Contractor, or by any act of the Owner, or his agents, or employees, resulting in the keeping of an excavation open longer than would otherwise have been necessary, relieve the Contractor or from the necessity of properly and adequately protecting the excavation from caving or slipping, nor from any of his obligations under the Contract relating to injury of persons or property, nor entitle him to any claim for extra compensation.

### 3.15 PROTECTION OF PROPERTY AND STRUCTURES

- A. The Contractor shall, at his own expense, sustain in their places, and protect from direct or indirect injury, all pipes, tracks, walls, buildings, and other structures or property in the vicinity of his work, whether above or below the ground, or that may appear in the excavation. He shall at all times have a sufficient quantity of timber and plank, chains, ropes, trench boxes, and other material and equipment, on the ground and shall use them as necessary for sheeting his excavations and for sustaining or supporting any structures that are uncovered, undermined, endangered, threatened or weakened.
- B. The Contractor shall take all risks attending the presence of proximity of pipes, poles, tracks, walls, buildings, and other structures and property, of every kind and description, in or over his excavation, or in the vicinity of his work, whether above or below the surface of the ground; and he shall be responsible for all damages and assume all expense for direct or indirect injury, caused by his work, to any of time, or to any person or property by reason of injury to them, whether such structures are not shown on the Drawings.
- C. Where necessary, in order to keep one side of the street or roadway free from any obstruction or to keep the material piled alongside the excavation from falling on private property outside the right of way, a safe and suitable fence shall be placed alongside the excavation.
- D. In the event of encountering quicksand, subsurface streams or similar dangerous contingencies, or where passing especially heavy building or any structures which by their construction or position might bring a great pressure upon the excavations the right is reserved by the Engineer to direct that such buildings, or structures, shall be underpinned, or supported and protected, or that special sheeting shall be driven in such a manner and to such depth, as may be directed, or that only a short length of

excavation shall be opened at one time; and furthermore, if necessary, that the excavation shall be securely sheeted and braced on all sides, after the manner of a shaft, and that the permanent work shall be constructed in the same manner and the shaft backfilled before another opening is made. Any work done as above directed shall be at the cost and expense of the Contractor.

- E. The Engineer reserves the right under such conditions to stop the excavation or any other part of the work, and to require the Contractor to complete the structure and the backfilling up to such a point as the Engineer may direct before proceeding further with the excavation; and the Contractor shall not thereby become entitled to demand or to receive any allowance or compensation, other than an extension of the contract time for as many days as the Engineer may determine that the work was delayed by such stoppage.

### 3.16 OBSTRUCTION SHOWN ON DRAWINGS

- A. Certain information regarding the reputed presence, size, character, and location of existing underground structures, pipes and conduits has been shown on the Contract Drawings. There is no certainty of the accuracy of this information. The location of underground structures shown may be inaccurate and other obstructions not shown may be encountered.
- B. The Contractor hereby distinctly agrees that the Owner is not responsible for the correctness or sufficiency of the information given; that in no event is this information to be considered as a part of the Contract; that he shall have no claim for delay or extra compensation on account of incorrectness of information given, or on account of the insufficiency or absence of information regarding obstructions either revealed or not revealed by the Drawings; and that he shall have no claim for relief from an obligation of responsibility under the Contract, in case the location, size or character of any pipe or other underground structure is not as indicated on the Drawings; or in case any pipe or other underground structure is encountered that is not shown on the Drawings.
- C. The Contractor is solely and completely responsible for contacting utility providers and locating services to field locate existing utilities 48 hours in advance of his activities. If inadequate locations are made, or if hand-digging of "test holes" is deemed necessary, this shall be accomplished and affected by the Contractor at no additional expense to the Owner.

### 3.17 REMOVAL OF OBSTRUCTIONS

- A. Should the position of any pipe, conduits, pole, or other structures, above or below the ground be such as, in the opinion of the Engineer, to require its removal, realignment, or change due to work to be done under the Contract, the work of

removal, realignment, or change will be done as extra work, or will be done by the Owner of the obstructions, without cost to the Contractor; but the Contractor shall uncover and sustain the structures, at his own expense, before such removal and before and after such realignment or change as constituting part of the Contract; and the Contractor shall not be entitled to any claim for damage or extra compensation on account of the presence of said structure, or on account of any delay in the removal or rearrangement of the same.

- B. The Contractor shall, without extra compensation, break through and reconstruct, if necessary, the invert or arch of any sewer, culver, or conduit that may be encountered, if the said structure is in such a position that in the judgment of the Engineer, as not to require its removal, realignment or complete reconstruction.
- C. The Contractor shall not interfere with any persons, firms or corporations, or with the Owner in protecting, removing, changing, or replacing their pipes, conduits, poles, or other structures; but he shall suffer said persons, firms, or corporations, or the Owner to take all such measures as they may deem necessary or advisable for the purpose aforesaid, and the Contractor shall thereby be in no way relieved of any of his responsibilities under this Contract. At railway or railroad track crossings or paralleling, any expense to which the Owner of the trackage is put in shoring up tracks, or in maintaining traffic, shall be borne by the Contractor, whether the same is billed directly to him, or the Owner. Should any such bill be unpaid by the Contractor, before final payment under the Contract is made, the Owner shall be empowered to pay said bill and retain the amount thereof, from any monies due, or to become due the Contractor.
- D. Except where trees are in rights-of-way, in immediate proximity to the excavation, they shall not be cut down except by authorization of the Engineer,, and the Contractor shall have no claim for the extra compensation owing to the fact that he may be required to excavate by hand, or tunnel in the vicinity of trees that may be left standing.

### 3.18 CHANGE OF EXCAVATION LOCATION

- A. In case the Engineer shall direct that the location of a trench or other excavation be changed from that shown on the Drawings, on account of the presence of an obstruction, or from other cause, or if a changed location shall be authorized upon the Contractor's request, the Contractor shall not be entitled to extra compensation, or to a claim for damage, provided that the change is made before the excavation is begun. If, however, such change, made at the direction of the Engineer, involves the abandonment of excavation already made, such abandoned excavation, together with the necessary refill, will be classed as miscellaneous excavation. In the event that the excavation is abandoned in favor of a new location, at the Contractor's request, the abandoned excavation and refill shall be at the Contractor's expense.

- B. Minor changes in alignment of pipe or other structures to accommodate the actual location of existing facilities shall be considered typical of construction activities and no additional compensation will be made for changes of this nature.

### 3.19 CLEANUP

- A. As the trenches are filled in and the work completed, the Contractor shall immediately and at his own cost and expense remove and dispose of all surplus earth, stone or other material from the work, in such manner and at such point or points, as he may select or provide, subject to the approval of the Engineer; or he may deposit the same, either with or without rehandling, at any point or points on the line of the work covered by the Contract, if so directed by the Engineer; and shall leave all roads, sidewalks and other places free, clear and in good order. In case the Contractor shall fail or neglect to do so, or to make satisfactory progress in doing so within twenty-four (24) hours after the receipt of a written notice from the Engineer, the Owner may remove such surplus material and clear the roadways, sidewalks and other places, and the cost of said work shall be charged to the Contractor and deducted from any monies due or to become due him under the Contract.
- B. All surplus earth or other material wasted on public property shall be evenly spread and left in a neat and smooth condition. All removed materials shall become the property of the Owner, if they so desire. If the Owner does not want the removed materials, surplus materials will be removed by the Contractor at no extra cost to the Owner.
- C. As soon as the trenches are refilled, all surplus earth, sand or rubbish shall be removed and kept removed to a point not more than two hundred (200) feet from the head of the open trench, unless otherwise authorized by the Engineer.

### 3.20 MAINTENANCE OF BACKFILLED TRENCH SURFACES

- A. The Contractor shall crown to such height, as directed by the Engineer, the top of all backfilled trench excavations. The Contractor shall also maintain these crowned surfaces to the satisfaction of the Engineer, without additional compensation, from the time of crowning operation to and including a period of eight (8) months beyond date of a Certificate of Completion of the work under this contract.
- B. The Contractor shall be responsible for any injury or damage resulting from lack of required trench maintenance during the prescribed maintenance period. If the Contractor does not satisfactorily provide specified maintained surfaces or begin repairs of such surfaces when needed, within twenty-four (24) hours after written notice from the Engineer, such work may be done by the Owner and the cost thereof charged against the Contractor.

END OF SECTION

## SECTION 02200

### SITE GRADING

#### PART 1 - GENERAL

##### 1.01 Work Includes

- A. Excavation and embankment necessary for grading the site shall be considered to include that required for roads, walks, culvert installations, and drainage ditches and channels.

#### PART 2 - EXECUTION

##### 2.01 Preparation

- A. After the removal of topsoil, the then existing surface is to be excavated or filled to the elevations and slopes indicated on the Drawings, or as directed by the Engineer. Additional fill, if required, and is not available elsewhere, shall be excavated from borrow areas selected by the Contractor, but subject to the approval of the Engineer. Unless otherwise provided, all borrow pits shall be located entirely outside the limits of the site.
- B. On areas where roadway pavement is to be placed, the subgrade therefore shall be no more than 0.10 foot above or below the established grade; in other areas, the finished grade shall be not more than 0.15 foot above or below the established grade.
- C. Where rock is encountered at road subgrade or finished grade in areas other than roads, it shall be removed for a depth of six (6) inches below such subgrade or finished grade elevation.
- D. Subgrades and shoulders for the access and service roads shall be constructed to the lines and grades indicated, and in conformance with the applicable requirements of the "Standard Specifications" for the Florida State Department of Transportation.

##### 2.02 Embankment

- A. On hillsides in which the existing slope is steeper than four to one, the Engineer may require the surface to be plowed to provide binding of the embankment with the original ground. When, in the opinion of the Engineer, existing slopes are excessive, the Engineer may require the original ground to be cut into the steps or berms.
- B. All materials removed from classes of excavation, which are determined as suitable by the Engineer, shall be used in the formation of embankments. Excavated material which is not required for embankments shall be disposed of by the Contractor, at his

responsibility and expense, outside the limits of the site, unless the Engineer gives notice of some point of disposal within the site. No material shall be disposed of in any flood channel area.

- C. Earth or other friable materials shall be placed in successive horizontal layers of loose material not more than nine (9) inches in depth, spread uniformly by use of graders or other approved devices, and rolled until thoroughly compacted with an approved three (3) wheel power roller weighing not less than ten (10) tons. The Engineer may permit the Contractor to use approved sheep-foot tamping rollers. Embankments at points inaccessible to the roller shall be made in horizontal layers of loose material not exceeding six (6) inches in depth and thoroughly compacted by mechanical tampers.
- D. Where rock only is available, it shall be placed in loose layers not exceeding two (2) feet in depth and rolled as provided above. Rock fills shall only be considered as such where the earth or other finer materials is uniformly distributed and is considerably less than sufficient to fill the voids and interstices; otherwise it shall be considered and placed as earth fill. The top layer of rock fills shall not exceed eight (8) inches in depth, and the interstices shall be thoroughly filled with small spall, shale, gravel, or other similar approved material and thoroughly compacted. This top layer of rock shall be kept at least eight (8) inches below the elevation of subgrade for payments, and finished grade elsewhere, with the balance of the fill formed by topsoil or other approved material, as required.
- E. No roots, leaves, grass, or any form of vegetation shall be placed or allowed to remain in filled or graded areas.
- F. The Contractor shall be responsible for the stability of all embankments and shall replace all sections which, in the opinion of the Engineer, have been damaged or displaced due to carelessness or neglect on the part of the Contractor due to natural causes, such as storms.
- G. During grading operations, cuts and fills shall be kept shaped and drained at all times.

END OF SECTION

## SECTION 02500

### PAVING

#### PART I - GENERAL

##### 1.01 WORK INCLUDED

- A. The work covered and described in this section includes the furnishing and construction of paved surfaces, including roadways, driveways, bicycle paths, shoulders, and other paved surfaces, or paving work as shown or indicated on the drawings, specified herein, and as listed in this contract.
- B. All work shall conform to the applicable Technical Specifications of Florida Department of Transportation "Standard Specifications for Road Bridge Construction" latest Edition (Divisions II and III) and Design Standards", latest Edition, including any amendments thereto. The Contractor shall acquire his own copies of the Department of Transportation Standards. In the event of conflict between the Department of Transportation Standards and the specifications listed in these documents, the Owner/Engineer shall determine which shall govern. Reference to the Department of Transportation Standards, to the Department or its representatives shall be interpreted for this contract to be the Owner/Engineer or their authorized representative.

#### PART II - MATERIALS

##### 2.01 SUBBASE

- A. The materials used should be high bearing value soil, sand-clay, ground limestone, crushed limerock, coquina, or any other material suitable for stabilization. Muck shall not be used.

##### 2.02 BASE COURSE

- A. The base course material used shall be that specified in the plan sheets or contract documents. If no base material is specified, limerock shall be used, unless otherwise indicated. All base material shall be approved by the Owner/Engineer and supplied by the Contractor.
- B. The limerock base material shall have a minimum of 70% carbonates, calcium and magnesium and no more than 3% water sensitive clay. The liquid limit shall not exceed 35 and the plastic index shall not exceed 10. The average LBR value of the material shall be no less than 100, nor be large amounts of extremely hard pieces of clay pockets.

- C. Soil-cement base shall be composed of a combination of soil and Portland cement uniformly mixed, moistened, compacted, finished, and cured. The soil shall be either existing in-place material or that brought from borrow locations. All soil must meet the requirements set forth in FDOT Standards and Specifications for Road and Bridge Construction Latest Edition, The cement used shall be Portland cement Type I or I-P and water shall be free from any substances deleterious to hardening of the soils-cement mixture.
  - 1. The soil-cement mixture shall be proportioned in accordance with a design mix prepared by a testing laboratory and approved by the Owner/Engineer. The design mix shall be submitted for approval at least 30 calendar days prior to beginning of soil-cement construction. The cement content shall be expressed in percentage of dry weight of the soil. Rate of application shall be based on the maximum density of the soil, determined in accordance with AASHTO T 99 and a thickness one inch greater than the base course thickness shown on the plans.
- D. Asphalt base courses shall have a bituminous material content of asphalt cement, viscosity Grade AC-20 or AC-30, meeting the requirements of FDOT Standards and Specifications for Road and Bridge Construction, Latest Edition. The bituminous mixture shall be composed of a combination of aggregate, bituminous material. The job mix formula, as established by the Contractor, must be approved by the Owner/Engineer. The asphalt base mix shall be within the design ranges specified for mix Type ABC-3 or S-II, (Use of any other mix is subject to the approval of the Owner/Engineer.). The constituents of the mixture shall be combined to produce a mixture having Marshal properties within the limits of Appropriate Table of the FDOT Standards and Specifications for Road and Bridge Construction, latest Edition.
- E. Coquina shell used in the base course shall have an organic material of not greater than 0.5% or contain significant quantities of sand or other impurities which would prevent bonding. At least ninety-seven percent (97%) of the coquina used shall pass through a three and one-half inch (3-1/2") ring.
- F. Recycled concrete aggregate used in the base course shall conform to Appropriate Section, graded aggregate base, of the latest revision of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction.

## 2.03 PRIME AND TACK COATS

- A. Bituminous prime coats shall be applied to previously prepared bases. Bituminous tack coats shall be placed on existing paved surfaces and between successive lifts of asphalt material.
- B. The prime coat shall be Cut-back asphalt Grade RC-70 or RC-250; Emulsified Asphalt Grades SS-I , CSS-I, SS-1H or CSS-1H diluted in equal proportion with

water or other types and grades of bituminous material specified or approved by the Owner/Engineer.

- C. The tack coat shall be RA-500 heated to a temperature of 250° to 300° For undiluted Emulsified Asphalt, Grades RS-1 or RS-2 heated to a temperature of 140° to 180°F,
- D. A cover material must be placed on the prime coat to insure that the prime coat remains intact until the surface course is placed.

#### 2.04 ASPHALT WEARING SURFACE

- A. The bituminous wearing surface applied shall be that specified in the plan sheets or contract documents. If no asphalt mix is specified, Type SP-9.5 Super Pave asphaltic concrete shall be used as the paving material, unless otherwise indicated.
- B. The asphaltic mixture shall be transported to the site at a temperature of 300E F to 350E F. Mixtures that have cooled below 270E F will be rejected. The mix temperature will be taken on the first five loads each day and on an average of once every five loads thereafter.
- C. The Contractor is entirely responsible for producing a homogenous mixture, free from moisture and with no segregated materials, and meeting all requirements of the specifications for the mixture. Prior to the production of any asphalt paving mixture, the Contractor shall submit, in writing, a proposed job mix formula, at least two weeks prior to the beginning of any paving activities. All requests for design mix adjustments, redesigns and new design mixes will be submitted, in writing, to the Owner/Engineer.

### PART III - EXECUTION

#### 3.01 SUBBASE

- A. Prior to installation of base material, the area shall be graded to within 0.2∇ feet, and soft, spongy or mucky material removed. Sufficient stabilizing material shall be cut in to achieve a Florida Bearing Value (FBV) in excess of seventy-five (75) psi or limerock bearing ratio (LBR) greater than forty (40) pounds at a minimum density of ninety-eight percent (98%) of a maximum density as defined and measured in AASHTO T 180 (Modified Proctor), to a six inch (6") minimum depth.
- B. Density test for subbase materials shall be taken at 300 foot intervals and around structures as required. If compaction procedures allow testing requirements may be reduced at the Owner/Engineer's discretion.

### 3.02 BASE COURSE.

- A. The base course shall be constructed on the prepared subgrade, in accordance with the specifications and plan sheets. All base material shall be placed in accordance with the lines, grades, notes, and typical cross sections shown on the plans. Any deviation from the plan sheets is subject to the approval of the Owner/Engineer. Any deviations not approved by the Owner/Engineer shall be repaired to the satisfaction of the Owner/Engineer at no expense to the Owner.
  
- B. Limerock Base
  - 1. Limerock base shall be spread by mechanical spreaders, equipped to produce an even distribution with a uniform thickness. When the specified compacted thickness of the base is greater than six inches, the base shall be constructed in two courses. The thickness of the first course shall be one-half the total thickness of the finished base. After spreading is completed, the entire surface shall be scarified and shaped so as to produce the required grade and cross section after compaction. If two courses are required, each lift shall be prepared as previously described. Prior to spreading of the upper course, density tests will have been taken for the lower and determined to be satisfactory.
  
  - 2. All materials shall be compacted to a density of not less than ninety-eight percent (98%) of maximum density as determined by AASHTO T 180. Density tests shall be taken in at least three locations on each day's final compaction of each course. Density determinations shall be made at more frequent intervals, at no extra cost, if deemed necessary by the Owner/Engineer.
  
  - 3. The finished surface of the base course shall be checked with a template cut to the required crown and a 15 foot straight edge laid parallel to the center line of the road. All irregularities greater than 1/4" shall be corrected to the satisfaction of the Owner/Engineer.
  
  - 4. The base material shall extend at least 12 inches outside the edge of the finished paved surface, unless otherwise indicated. Thickness of the base shall be measured at 200 foot intervals at various points in the cross section. Where the compacted thickness is deficient by 1/2" or more, the Contractor shall correct the deficiency by scarifying and adding rock for a distance of 100 feet in each direction from the edge of the deficient area. The required thickness, compaction and cross section will then be achieved.
  
  - 5. Prime coat shall be applied only when the base meets the specified density and the moisture content in the top half of the base does not exceed 90% of the optimum moisture of the base material.

C. Soil Cement Base

1. Soil-cement mixing shall be either mixed-in-place or a central plant mix.
2. If mixed-in-place, the entire width of the base shall be processed in a single operation, where possible. The specified quantity of cement shall be applied at the required rate by means of an approved method. Mixing will begin within sixty minutes after the cement has been applied. Processing may be to full depth in one course, provided that the satisfactory distribution of cement, water, soil and the specified density can be obtained. If not, construction shall be in courses of such thickness to obtain satisfactory results. Adequate bonding between courses must be achieved. After mixing soil and cement, additional water shall be added, if necessary. After all mixing water has been applied, mixing shall continue until a uniform mixture has been obtained. Excessive concentrations of water shall be avoided.
3. Central plant mixtures shall have been mixed for at least 30 seconds. The mixture shall be placed on the moistened subgrade in a uniform layer by an approved spreader. The layer of soil-cement shall be of uniform thickness and surface contour. The completed base will conform to the required grade and cross section.
4. Compaction of the soil-cement mixture shall begin immediately after mixing is complete. The optimum moisture content and maximum density shall be determined in the field by the methods described in AASHTO T 143. The base shall be compacted to not less than 95% of the maximum density. The soil-cement mix design shall be 350 psi at 28 days, unless otherwise indicated, and moisture content and density tests shall be taken every 300 lineal feet to a minimum depth of six inches.
5. After compaction, the surface shall be shaped to the required lines, grades and cross section. The moisture content of the surface material shall not be more than 2 percent less than the specified optimum moisture content during finishing operations. The finished surface shall be smooth, dense, and free of compaction planes, cracks, ridges and loose material.
6. Construction joints shall be formed by cutting back in the completed work to form a true vertical face. The vertical face shall be a straight transverse line perpendicular to the centerline of the roadway.
7. The finished surface of the base shall be tested with a template and a 15 foot straight edge. All irregularities greater than 1/4" shall be corrected to the satisfaction of the Owner/Engineer.

8. The finished surface shall be kept continuously moist until the surface is treated with either cut-back asphalt, Grade RC-70 applied at .15 to .20 gallons per square yard; or a mixture of emulsified asphalt and water applied at a rate of .20 to .25 gallons per square yard. If the Owner/Engineer deems it necessary, the surface shall be sanded using 10 pounds of clean sand per yard.

D. Asphalt Base Course

1. Asphalt base courses shall be applied in accordance with FDOT Standards and Specifications for Road and Bridge Construction, Appropriate Section. The job mix formula approved for the project shall be used. Any deviation from the approved mix must be submitted to the Owner/Engineer and approved before being implemented.
2. The base course material shall be placed with an approved paving machine. A motor grader may be required if a leveling course is needed. The base mix may be placed when the air temperature is at least 40° and rising, provided that the sub-grade is not frozen or affected by frost.
3. A paver, equipped with automatic screed control, shall be used for all machine-laid courses. The automatic joint matcher shall be used on the top course of the base after the first pass with a paving machine. All mixtures shall be laid by the string line method, with the exception of areas adjacent to curb and gutter or other true edges. The temperature of the mix shall be between 300°F and 350°F. Any mixture caught by rain in transit may be laid at the contractor's own risk; if removal and replacement is required, it shall be at the expense of the contractor. In no case shall the mixture be spread when rain is falling or when there is water on the surface to be covered. The layer thickness for asphalt concrete structure courses shall match those listed in the table below.

E. Recycled Concrete Base Course

1. Recycled concrete base course shall be transported, spread compacted and finished per Appropriate Section, of the latest revision of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction.
2. The depth of all layers shall be checked every 50 feet. A tack coat, as specified, will be required on existing pavements to be overlaid with an asphalt mix and between successive layers of all asphalt mixes.

F. Compaction.

1. After the asphalt mixture has been spread to the proper lines, grades, and cross sections, compaction operations may begin. The Contractor shall establish rolling procedures and submit his sequence of compaction operations to the Owner/Engineer for approval. The equipment used may include, but is not committed to steel-wheeled rollers, pneumatic tired rollers, and vibratory rollers. Areas which are inaccessible to a roller shall be compacted by the use of hand tamps or other satisfactory means. An entire sequence of compaction operations shall be performed for each layer of applied material, density determinations shall also be made.
2. The in-place density of each course shall be determined through core samples and the nuclear backscatter method. A core sample of a representative paving section shall be taken for each day's production of paved surface; backscatters shall be taken every 30 feet at various locations in the cross section. Additional testing around manholes or other structures may be required.
3. Testing and density requirements shall not apply to the following construction activities: Asphalt patching courses, leveling and intermediate course less than one inch thick, overbuild courses less than one-inch thick and open graded friction courses.

G. Shell Base Material

1. Shell base material shall be constructed on the prepared subgrade in accordance with these specifications and in conformity with the lines, grades and cross sections shown on the plans. The shell base shall be spread uniformly and evenly; during spreading operations the shell shall be thoroughly saturated with water.
2. After spreading the shell shall be compacted, with water being added as required, until the required density is obtained. Compaction and density shall be as required for limerock base, except that the testing methods shall be modified in the laboratory and in the field. At least three density determinations shall be made on each day's final compaction operations.
3. Upon completion of initial compaction, the entire surface shall be scarified and shaped to exact crown and cross section. The base shall then be rewatered and compacted to the required density. The finished surface shall be tested with a template and 15 foot straight edge. All irregularities greater than 1/4 inch shall be corrected to the satisfaction of the Owner/Engineer. The prime coat shall be applied after the base meets all density and finish requirements.

### 3.03 ASPHALT WEARING SURFACE

- A. The asphalt wearing surface shall be constructed on the prepared base in accordance with the plans and specifications and in conformity with the indicated lines, grades, and cross sections. If no asphalt mixture is indicated, the specified mixture shall be Type SP-9.5 Super Pave Asphaltic Concrete. A job mix formula shall be submitted to the Owner/Engineer for approval at least two weeks prior to the application of paved surfaces.
- B. The mixture shall be spread only when the base is clean, dry, properly cured, and approved by the Owner/Engineer. The temperature shall be at least 40° F and rising. No paving operations will be permitted if it is raining or rain is imminent. The mix shall be between 270°F and 350°F.
- C. The asphalt mixture shall be spread with an approved paving machine to the required width and depth. All mixes, except those adjacent to curb and gutter, shall be laid according to the string line method. The depth of each layer shall be checked every 50 feet.
- D. The mixture shall be compacted to its final depth, no less than 1 1/4" and thicker if so indicated. Compaction and layering procedures specified for asphalt base courses shall apply to surface courses. All testing and density requirements will also apply.
- E. When laying operations are interrupted, a transverse joint shall be constructed by cutting back on the previous run to expose the full depth of material. Longitudinal joints are to be sloped or rolled over and sealed. When the adjacent strip is constructed, the edge shall be trimmed back to expose the unsealed face. All longitudinal construction joints shall be offset 6" to 12" laterally between layers.
- F. When fresh mixture is laid against transverse or longitudinal joints, it shall be placed in contact to produce an even, well compacted joint after rolling.
- G. The finished surface shall be tested with a template and 15 foot rolling straight edge. Any irregularities shall be repaired to the satisfaction of the Owner/Engineer. The surface shall be of uniform texture and compaction. No sand spots, ripples, or loosened portions shall be evident. No traffic shall be allowed onto the finished surface until it is deemed acceptable by the Owner/Engineer.

### 3.04 CURING COAT

- A. During the period when finishing and surface corrosion of the soil-cement base are being accomplished, the surface of the base shall be kept continuously moist by sprinkling as necessary. As soon as deemed practicable, the curing seal shall be applied to the soil-cement base. The curing seal shall consist of Emulsified Asphalt Grade SS-I or SS-1H, diluted in equal proportion with water, and be applied at the rate of 0.15 to 0.30 gallons per square yard.

- B. The actual rate of application shall be as directed and shall provide complete coverage without excessive runoff. At the time the bituminous material is applied, the soil-cement surface shall be dense and free of all loose and extraneous material and shall contain sufficient moisture to prevent excessive penetration to the bituminous materials.
  
- C. Should it be necessary to allow construction equipment or other traffic to use the completed base before the bituminous material has cured sufficiently to prevent pickup or displacement; the bituminous material shall be sanded, using approximately ten pounds of clean sand per yard.

END OF SECTION

## SECTION 02600

### MANHOLES

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

- A. The work of this section consists of construction of brick or precast concrete manholes at the locations shown on the drawings.

##### 1.02 QUALITY ASSURANCE

- A. All materials shall be tested for conformance with the specified standards. Reports of tests performed by the Manufacturer or by an independent laboratory shall be furnished with each shipment.
- B. Standards. Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, hereafter called the Standard Specifications, latest edition.

#### PART II - MATERIALS AND EQUIPMENT

##### 2.01 PRECAST CONCRETE.

- A. Precast manholes shall be composed of precast reinforced concrete bases, risers, grade rings, and tops which have been designed and fabricated in accordance with the requirements of ASTM C478, with the exception that wall thickness shall be one-inch greater than those specified in ASTM C478. Materials used in fabrication shall conform to the requirements of the Standard Cement used in construction of precast manhole components shall be Type II portland cement conforming to the requirements of ASTM C150.

##### 2.02 JOINT MATERIAL.

- A. Joint material for use between precast manhole sections shall be cold adhesive preformed plastic gaskets conforming to the requirements of Section 942, Pipe Gaskets, of the Standard Specifications.
- B. Joints for pipe entry into manholes shall be of the type which uses a rubber gasket as the sealing medium. The rubber gasket shall be cast into the manhole section in such a manner as to form a water tight joint when the pipe is inserted. Gaskets shall conform to the requirements of ASTM C445.

2.03 BRICK.

- A. Brick for construction of manholes shall conform to the requirements of ASTM C-32, Grade MS or to the requirements of Federal Specification SS-B-656.

2.04 CONCRETE.

- A. Concrete for use in construction of brick manholes shall develop a compressive strength of not less than 2,500 psi at 28 days. Cement used in concrete for manhole construction shall be Type II Portland cement conforming to the requirements of ASTM C150.

2.05 MORTAR

- A. Mortar for manhole construction shall consist of one part Type II portland cement and two parts of fine sand with water added for proper consistency. Lime shall not be used in mortar for manholes.
- B. Portland cement for use in mortar and grout shall conform to the requirements of ASTM C150, Type II.
- C. Sand for use in mortar and grout shall conform to the requirements of ASTM C144.

2.06 MANHOLE FRAMES AND COVERS.

- A. Manhole frames and covers shall be gray iron casings conforming to the dimensions shown or equivalent foundry patterns. All mating surfaces shall be machined to prevent rocking or rattling of frames and covers. Casings shall be free of cracks, blow holes or swells and shall have a smooth and workmanlike finish. Casing shall conform to the requirements of ASTM A48. Manhole covers shall be of the concealed pickhole design and shall have the name of the Owner and use of the line on which it is installed cast in the cover.

2.07 COATING MATERIALS.

- B. Coating materials for use on the interior of manholes shall be thermosetting plastic of the modified epoxy type consisting of 100 percent non-volatile material. Material for use on the exterior of manholes shall be Coal-tar epoxy, Koppers Bitumastic No. 300-M or Porter Series 7000-Torset, Rust-Oleum 9578, or equivalent.

## PART III - EXECUTION

### 3.01 BRICK MANHOLES

- A. Manholes shall be constructed of brick masonry, with cast iron frames and covers as previously specified. Mortar shall be properly proportioned, thoroughly mixed, and used immediately. Any mortar entering the initial set, requiring additional water or heating, shall be discarded.
- B. Bricks will be laid radially and pressed into the mortar spread on the previous course. Each brick will be pressed against the adjoining brick so that inside vertical corners touch. The mortar shall totally fill all space between bricks. The inside wall of the manhole shall be wiped clean of excess mortar.
- C. Excess mortar on the outside of the manhole shall be kept troweled smooth or cut off. Corbels are to be concentric, and built in 12 courses, unless otherwise specified. The exterior of the manhole shall be plastered to a 5/8 inch thickness, shrinkage cracks shall be sealed by brushing before the final set. Risers between corbels and cast iron frames shall be limited to 12-inches.
- D. The exterior plastered surface of the manholes shall be coated with an approved asphaltic waterproofing material. When outside drops are constructed on manholes, the drop shall be entirely supported by the slab. The drop stack may be formed by brick and poured with concrete, or built up with brick and mortar. Memphis Tees shall be used in the drop structures.
- E. All drop manholes and all manholes receiving the discharge from force mains shall have the inside surfaces coated as specified for precast manholes.

### 3.02 PRECAST MANHOLES

- A. Precast, reinforced concrete manholes shall have tongue and groove interlocking joints. Inverts shall be formed as specified herein. Shop drawings shall be submitted and approved by the Engineer prior to Contractor placing order with supplier.
- B. Any modifications necessary to adapt the units to conform to the locations and grades shown or required shall be made without additional compensation. It shall be the responsibility of the Contractor to assure that all manhole inlets are provided at the proper locations and elevations to accommodate the actual field requirements without additional compensation.
- C. Slabs for precast manholes will extend a minimum of 6-inches beyond the outside face of the manhole wall.
- D. All slabs for precast drop manholes shall be of sufficient size to entirely support the drop structure.

### 3.03 MANHOLE UNITS

- A. Precast manholes shall consist of a base unit with openings for the sewer pipe, riser units of various lengths to build the manhole up to the required depth and concentric cones. The minimum height of the shortest riser shall be 12-inches.
- B. All fiberglass products shall be subject to OCFC visual inspection standards prior to installation. This system shall be used where shown in the drawings.
- C. Fiberglass manhole liners shall be constructed on the base slab as specified and shall be encased by brick masonry as previously specified under "Brick Manholes".
- D. Any pipe entering through the manhole walls with an invert equal to or high than the benches will be sealed all around to the interior walls by use of fiberglass patching kit. There shall be no mortar exposed above bench level.

### 3.04 INVERTS

- A. Invert channels shall be constructed smooth and semicircular, conforming to the inside of adjacent sewer section. The mortared invert channel shall have a steel trowel finish. Changes in direction of flow shall be made in a smooth curve of as large a radius as possible. Changes in size and grade shall be made gradually and smoothly. Whenever possible, inverts shall be formed with a full section to pipe, laid through the manhole and breaking out the top half.
- B. Benches shall be built up solidly with concrete or brick and mortar shall be sloping to the invert.
- C. All inside drops shall have a flume constructed to channel flow into the invert. Standard drop manholes shall be built whenever the inside drop exceeds 24". All pipe entering the manhole must be trimmed flush with the walls. All exposed sharp edges of pipe shall be wiped smooth with mortar.
- D. The manhole floor shall be sloped towards the channels on a slope of 2 inches per foot.

### 3.05 INSPECTION OF LINES AND MANHOLES

- A. Inspection of completed lines and manholes shall be scheduled within a reasonable time after construction or when required by the Engineer.
- B. Before scheduling an inspection, the Contractor shall prepare the lines by cleaning and flushing. Manholes shall be clean, finished and free of leaks.

- C. Infiltration of gravity sewers between successive manholes shall not exceed that specified. Where lines are laid above the water table, the Engineer may require the Contractor to perform exfiltration tests between manholes. The exfiltration tests will be conducted with a constant three feet of head at the upstream manhole. The exfiltration rate shall not exceed the allowable infiltration rate.
- D. Manholes shall be on a true and uniform grade. The inverts shall have a smooth steel troweled finish. All benches shall be uniformly sloping. The frames shall be tight and properly set in mortar on solid masonry. The invert, benches and adjacent pipe shall be free of splattered mortar. All required interior lining or paint shall be kept intact. Manhole frames shall be adjusted to grade with the covers and frames cleaned and free of mortar and asphaltic mixtures. All precast manhole seams shall be filled with an approved asphaltic compound.
- E. Pipe between manholes shall be line and grade. Inspection shall be by mirror and sunlight, and, when required, will be followed by air testing and/or television inspection at the Contractor's expense. Contractor shall provide personnel to assist with inspections.
- F. All known or indicated breaks shall be repaired by the Contractor regardless of the test allowances.
- G. Faulty sections of sewer lines or manholes rejected by the Engineer shall be removed and relaid by the Contractor. Sunken manholes will not be accepted.
- H. All exposed interior surfaces and the tongue and groove ends of each unit shall be sand blasted and brushed clean and immediately thereafter completely coated with a protective coating of not less than 15 mils of Koppers 300 M, Tnemec TnemeTar No. 46-413, or equal. The coating shall be applied in strict accordance with manufacturer's recommendations.
- I. All exterior surfaces shall be brushed clean and immediately thereafter completely coated with a protected coating of not less than 15 mils of Koppers 300 M, Tnemec Tneme-Tar No. 46-413, or equal. The coating shall be applied in strict accordance with the manufacturer's recommendations.
- J. The interior and exterior paint shall be intact and continuous. Any chips or holidays shall be patched using one thick coat of Koppers 300 M, Tnemec Tneme-Tar No. 46-413, or equal, used according to manufacturer's instructions and with the knowledge of the Engineer.
- K. Top and bottom ends or riser or sections shall be perfectly formed so that continuous and uniform contact is possible around the entire joint. Malformed joints shall be rejected.

### 3.06 INSTALLATION

- A. All slabs or bottom sections shall be installed at a grade that will allow clearance under the bells of the pipe. All slabs or bottom sections shall be solidly installed on 3/4-inch bedding stone which has been compacted against firm undisturbed ditch bottom. Depth of bedding stone will be as directed by the Engineer.
- B. The tongue and groove ends of each unit shall be primed with Ram-nek primer and allowed to dry. Immediately before placing the next unit, the joints shall receive a coating of Ram-nek. Enough plastic material shall be placed in the joint to squeeze a bead of excess material out of the joint insuring a completely sealed joint. Outside of manhole section joints to be packed with mortar and wiped.
- C. In lieu of the above jointing procedure, the Contractor may use an epoxy type bonding mortar to join the units and trowel Intertol Plastic (Trowel Grade), or equal, into both the interior and exterior joints insuring a watertight joint. Outside of manhole section joints to be packed with mortar and wiped.
- D. The top of the cone shall be set between 2-1/2 inches and 14-1/2 inches below the bottom of the manhole cover frame. It is the intent of the specifications to provide a minimum of 2-1/2 inches to accommodate future grade changes without disturbing the manhole. Where the distance between the bottom of the manhole cover frame and the top of the cone is greater than 14-1/2 inches, 12 inch riser units shall be used to bring the top of the cone to within the limits specified.
- E. The annular space between the sewer pipe and the opening in the manhole shall be grouted with Portland Cement mortar and wiped or collared to insure a watertight joint.

### 3.07 FIBERGLASS LINED MANHOLES

- A. Fiberglass liners shall be specifically manufactured for sewer use by a reputable firm such as Owens Corning Fiberglass Corporation, Armco Construction Products Division, or equal. These products shall meet all requirements of latest ASTM Designation C-582 (plastic laminates) and ASTM Designation C-581 (chemical resistance). The properly installed liners shall not fail under H-20 dynamic wheel load applied vertically.

END OF SECTION

## SECTION 02660

### WATER DISTRIBUTION SYSTEM

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. Scope of Work:

1. The work under this section includes providing a complete system of water and reclaimed water distribution pressure piping and appurtenant items.

###### B. Related Work Described Elsewhere:

1. Section 02100: Excavation, Backfill and Embankment
2. Section 02531: Horizontal Directional Drilling
3. Section 15050: Piping Materials, Designation and Testing
4. Section 15100: Process and Utility Piping, Fittings, Valves and Accessories.

##### 1.02 QUALITY ASSURANCE

###### A. Design Requirements:

1. Water and reclaimed water mains shall be laid with a minimum cover of 36 inches below finished grade, unless otherwise indicated.
2. Water and reclaimed water (typical this section) mains shall be constructed of the materials indicated on the drawings. Ductile iron pipe may be substituted for polyvinyl chloride pipe.
3. Changes in horizontal alignment of 113 degrees or less may be achieved through use of allowable pipe deflection in lieu of fittings shown on the drawings at the contractor's option, but subject to approval of the Engineer as to layout. Said deflection shall not exceed limits set forth in applicable AWWA Standards.

- ###### B. Pipe Inspection:
- The Contractor shall obtain from the pipe manufacturers a certificate of inspection to the effect that the pipe and fittings supplied for this Contract have been inspected at the plant and that they meet the requirements of these specifications. All pipe and fittings shall be subjected to visual inspection at time of

delivery by rail or truck, also just before they are lowered into the trench to be laid, and joints or fittings that do not conform to these specifications will be rejected and must be removed immediately by the Contractor. The entire product of any plant may be rejected when, in the opinion of the Owner, the methods of manufacture fail to secure uniform results, or where the materials used are such as to produce inferior pipe or fittings.

- C. Prevention of Electrolysis: Where deemed necessary, electrolytic action through the contact of dissimilar metals, shall be prevented by either:
  - 1. The separation of one material from the other by means of an insulating or dielectric coupling, or
  - 2. The use of alternative materials, as approved by the Engineer.

### 1.03 SUBMITTALS

- A. Shop Drawings: The Contractor shall submit to the Engineer shop drawings in accordance with Section 01340: Shop Drawings. At minimum the shop drawings shall include:
  - 1. Mill test certificates or certified test reports on pipe.
  - 2. Details of restrained and flexible joints.
  - 3. Meter vault and boxes
  - 4. Valves and valve boxes
  - 5. Service connection assemblies
  - 6. Disinfection method
- B. Acceptance of Material: The Owner reserves the right to sample and test any pipe or fitting after delivery and to reject all pipe and fittings represented by any sample which fails to comply with the specified requirements.

### 1.04 JOB CONDITIONS

- A. Water in Excavation: Water shall not be allowed in the trenches while the pipes are being laid and/or tested. The contractor shall not open more trench than the available pumping facilities are able to dewater to the satisfaction of the Engineer. The contractor shall assume responsibility for disposing of all water so as not to injure or interfere with the normal drainage of the territory in which he is working. In no case shall the pipelines being installed be used as drains for such water, and the ends of the pipe shall be kept properly and adequately blocked during construction by the use of approved stoppers and not by improvised equipment. All necessary precautions shall be taken to prevent entrance of mud, sand, or other obstructing matter into the pipelines. If on completion of the work any such material has entered the

pipelines, it must be cleaned as directed by the Engineer so that the entire system will be left clean and unobstructed.

## PART 2 - PRODUCTS

### 2.01 MATERIAL

- A. Materials shall conform to specification Section 15100.

## PART 3 - EXECUTION

### 3.01 PREPARATION

- A. Bedding:

1. Pipe Cradle: Upon satisfactory installation of the pipe bedding material as specified in Section 02220:
  - a. Excavating, backfilling, and compacting, a continuous trough for the pipe barrel and recesses for the pipe bells or couplings shall be excavated by hand digging. When the pipe is laid in the prepared trench, true to line and grade, the pipe barrel shall receive continuous, uniform support and no pressure will be exerted on the pipe joints from the trench bottom.
2. Cleanliness: The interior of the pipes shall be thoroughly cleaned of all foreign matter before being gently lowered into the trench and shall be kept clean during laying operations by means of plugs or other approved methods. During suspension of work for any reason at any time, a suitable stopper shall be placed in the end of the pipe last laid to prevent mud or other foreign material from entering the pipe.

### 3.02 INSTALLATION

- A. Pipe:

1. Gradient: Lines shall be laid straight, and depth of cover shall vary to provide uniform gradient or slope to pipe whether grading is completed or proposed at time of pipe installation. When a grade or slope is shown on the drawings, batter boards with string line paralleling design grade, or other previously approved means, shall be used by the Contractor to assure conformance to require grade.
2. Pipe Joint Deflection: Whenever it is desirable to deflect pipe, the amount of deflection shall not exceed the maximum limits as shown in AWWA

Standard C600 for ductile iron pipe and the maximum limits as established by the manufacturer of PVC pipe.

3. Rejects: Any pipe found defective shall be immediately removed and replaced with sound pipe at the contractor's expense.
4. Joint Compounds: No sulphur base joint compound shall be used.
5. Anchors: Concrete thrust blocks shall be placed at all bends, tees, plugs and other fittings to provide lateral support, except when restrained joints are specified. Thrust blocks shall conform to the details shown on the drawings and shall be of Class "B" concrete.
6. "Grip Ring", Special MJ Gland and Grip Ring: as manufactured by Romac Industries, Inc., Seattle, WA 98114 or approved restraining devices shall be used instead of thrust blocks for all pressure rated pipe sizes four inch through 24 inch diameter.

B. Installing Valves and Boxes:

1. Valves: Valves shall be carefully inspected, opened wide and then tightly closed and the various nuts and bolts shall be tested for tightness. Special care shall be taken to prevent any foreign matter from becoming lodged in the valve seat. Gate valves, unless shown otherwise, shall be set with their stems vertically above the centerline of the pipe. Butterfly valves shall have the disc shaft installed horizontally. Any valve that does not operate correctly shall be removed and replaced by the contractor at no expense to the Owner.
2. Valve Boxes: Valve boxes shall be carefully centered over the operating nuts of the valves so as to permit a valve key to be fitted easily to the operating nut. In areas to be paved, valve boxes shall be set to conform to the level of the finished surface and held in position by a ring of concrete placed under the support flange as shown on the drawings. The valve box shall not transmit surface loads to the pipe or valve. Care shall be taken to prevent earth and other material from entering the valve box. Any valve box which is out of alignment or whose top does not conform to the finished ground surface shall be dug out and reset. Before final acceptance of the work all valve boxes shall be adjusted to finish grade.

C. Installing Hydrants: Hydrants shall be set plumb and in true alignment with mains. They shall be securely braced against the end of the trench with concrete thrust blocks as shown on the drawings. Backfilling around hydrants shall be carefully done so as not to disturb the hydrant and shall be thoroughly compacted so as to support the hydrant securely.

D. Concrete Encasement:

1. Concrete encasement shall be constructed in accordance with the details shown on the drawings and shall be constructed of Class "B" concrete. Encasement shall be constructed as indicated on the drawings. Any fittings to be encased shall first be poly-wrapped and tied to facilitate repairs if needed at a later date.
2. The points of beginning and ending of pipe encasement shall be not more than 6 inches from a pipe joint to protect the pipe from cracking due to uneven settlement of its foundation or the effects of superimposed live loads.

E. Blow Off Connections: Blow off connections shall be installed at the locations and in accordance with the details shown on the drawings.

F. Service Connections: Service connections shall be installed at the locations and in accordance with the details shown on the drawings.

G. Backfilling:

1. After pipe has been laid, inspected, and found satisfactory, sufficient backfill shall be placed along the pipe barrel to hold the pipe securely in place during the conduction of the preliminary hydrostatic test. No backfill shall be placed over joints until the preliminary test is satisfactorily completed, leaving them exposed to view for the detection of visible leaks.
2. Upon satisfaction completion of the preliminary hydrostatic test, backfilling and compacting of the trench shall be completed.

H. Separation from Various Non-Potable Lines:

1. Potable water mains should be laid at least ten feet horizontally from wastewater/sludge/chemical piping and at least three feet horizontally from reclaimed water piping, or if a potable water main is laid less than ten feet horizontally from reclaimed water piping, the potable water main should be laid so that the bottom of the potable water main is at least 18 inches above the top of the wastewater/sludge/chemical/reclaimed water piping. Where a potable water main crosses wastewater/sludge/chemical/reclaimed water piping, the potable water main should be laid so that the bottom of the potable water main is at least 18 inches above the top of the wastewater/sludge/chemical/reclaimed water piping; or the crossing should be arranged so that all potable water main joints and wastewater/sludge/chemical/reclaimed water piping joints are equidistant from the point of crossing with no less than ten feet between any two joints.

### 3.03 FIELD QUALITY CONTROL

- A. Flushing: All water mains shall be flushed to remove all sand and other foreign matter. The velocity of the flushing water shall be at least four feet per second. Flushing shall be terminated at the direction of the Engineer. The contractor shall dispose of the flushing water without causing a nuisance or property damage.
  
- B. Hydrostatic Tests:
  - 1. Hydrostatic tests shall be conducted in accordance with specification Section 15050: Pressure Testing of Piping.
  - 2. Water for testing and flushing shall be potable water provided by the contractor from a source approved by the Engineer.
  
- C. Disinfection:
  - 1. Before any portion of water distribution system is to be placed in service it shall be disinfected in accordance with the requirements of AWWA Standard C651; and its disinfection shall be demonstrated by bacteriological tests conducted in accordance with "Standard Methods for Examination of Water and Wastewater" for the coliaerogenes group, by an approved laboratory, acceptable to the Engineer and the County Health Department having jurisdiction and the State of Florida.
  - 2. The disinfecting agent shall be free chlorine in aqueous solution, with sustained concentration for 12 hours or more of not less than 50 parts per million (ppm). Chlorine may be derived from chlorine gas, or 70 percent (high test) calcium hypochlorite (HTH or Perchloron, or equal). Administration may be by any of the several methods described in AWWA Standard C651 as proposed by the contractor and approved by the engineer. Proposals as to method must be made prior to commencement of the disinfection process.
  - 3. Following contact with chlorine solution, the system shall be thoroughly flushed out. Samples shall then be taken using sterile containers. Samples shall be taken by the contractor and delivered by him to an approved laboratory for analysis.
  - 4. If samples do not demonstrate satisfactory results, the disinfection procedure shall be repeated until two series of satisfactory samples are obtained, the period between such series of samples to be a minimum of 24 hours.
  - 5. For reclaimed water mains, all lines shall be backflushed and cleared until chlorine residual is maintained.

### 3.04 SCHEDULE

#### A. Connection to Existing System:

1. All connections to existing mains shall be made after complete disinfection of the proposed system and shall be made under the direction of the Owner of the existing system. Valves separating the mains being installed from existing mains shall be operated by or under the direction of the Engineer. The cost of the work in making the connection shall be paid for by the contractor.
2. In the event the proposed main is to be connected to a main which has one or more active services between the point of connection and the first existing line valve, a temporary plug or cap shall be installed on the new main until the pressure tests and disinfecting are completed. Upon satisfactory completion, the cap or plug shall be removed from both mains and the connection made with pipe which has been swabbed out with a solution of chlorine and water. The connection shall be made as swiftly as possible and any water in the ditch shall be kept below the level of the pipe. The pipeline shall then be placed in service by the Owner's personnel.
3. In the event any existing users will be without water while a connection is being made, the Contractor shall notify them when the water will be turned off and when he estimates service will be resumed. In some instances, these connections may have to be made at night. No user shall be without water service for more than 2 hours.

END OF SECTION

## SECTION 02710

### STORM DRAINAGE SYSTEM

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

- A. The work covered and described in this section includes the furnishing and construction of storm sewers, inlets, manholes, endwalls and other drainage structures, or drainage construction as shown or indicated on the drawings, and specified herein, and as listed in the contract.
- B. All work shall conform to the applicable Technical Specifications of Florida Department of Transportation "Standard Specifications for Road and Bridge Construction" latest edition, (Divisions II and III) and "Roadway and Traffic Design Standards", latest edition, including any amendments thereto. The Contractor shall acquire his own copies of the Department of Transportation Standards. In the event of conflict between the Department of Transportation Standards and the specifications listed in these documents, the Engineer shall determine which shall govern. Reference in the Department of Transportation Standards to the Department or its representatives shall be interpreted for this contract to be the Owner and/or Owner's Engineer or their authorized representatives.

#### PART II - MATERIALS

##### 2.01 INLETS, MANHOLES AND JUNCTION BOXES

- A. Inlets, Manholes and Junction Boxes shall be constructed of reinforced concrete or brick masonry unless otherwise specified in the plans.
- B. All brick manholes shall be constructed according to the specifications set forth previously in Section 02600 - Manholes.
- C. Precast inlets, manholes and junction boxes may be used unless otherwise shown in the plans. The design and fabrication of precast units shall be in accordance with the plan drawings and the specifications listed in Section 02600 - Manholes. In storm sewer applications the interiors of inlets, manholes, and junction boxes will not require a protective coating; however, all other construction procedures will be followed.

##### 2.02 PIPE

- A. Round Concrete Pipe shall be reinforced concrete culvert pipe conforming to the requirements of Department of Transportation Standards and Specifications. Standard concrete pipe shall meet Class III design requirements of ASTM C76

and all accompanying modifications. Special concrete pipe shall meet Class IV design requirements unless Class V pipe is specifically designated. Pipe joints shall be rubber gasket joints manufactured and installed to meet the requirements specified in Section 942 of Florida Department of Transportation Standards and Specifications.

- B. Reinforced Concrete Arch Pipe shall conform to the requirements of ASTM Designation C 507-75. Class III pipe shall be used unless otherwise specified. Pipe joints shall have rubber gaskets and meet the above mentioned requirements as specified for concrete pipe.
- C. Reinforced Concrete Elliptical Pipe shall conform to the requirements of ASTM C 507, modifications to ASTM C 76 for round concrete pipe, shall also apply to elliptical pipe, where applicable. Standard elliptical pipe shall meet the requirements of Table I for Class HE-III and special elliptical pipe shall meet the requirements of Table I for Class HE-IV.
- D. Corrugated Steel Pipe shall meet design requirements specified in Section 943 of Department of Transportation Standards and Specifications. Pipe thickness for round culvert pipe shall match those listed in Table I of Section 943 and variations in thickness for pipe and connecting bands shall match those listed in Table II of the same section, unless otherwise indicated. At least two (2) full annular corrugations shall be provided on the ends of each section of pipe to accommodate connecting bands. All pipe shall be asphalt coated Type A as per AASHTO M 190.

### 2.03 HEADWALLS, ENDWALLS, AND END SECTIONS

- A. Headwalls, Endwalls and End Sections shall conform to details shown on the plan drawings and detail sheets. All drainage structures must be constructed in accordance with Florida Department of Transportation "Roadway and Traffic Design Standards", latest edition, unless otherwise specified. Any and all construction requirements, installation guidelines and safety considerations included within the "Roadway and Design Standards" must be followed and are the responsibility of the Contractor. In the event of a conflict between the design requirements shown on the plan sheets and those included in the Department of Transportation Standards, the Engineer or his representative shall determine the proper installation requirements.
- B. Steel End Sections shall be securely connected to each end of culvert for those locations where steel end sections are specified.
- C. Concrete used for headwalls, inlets, curb and gutter, valley gutter, slope pavement, ditch pavement, pipe endwalls and other miscellaneous items which are not structurally reinforced may be Class I, with a minimum compressive strength of 3,000 psi at 28 days.

## 2.04 REINFORCING STEEL

- A. Reinforcing Steel shall be billet steel bars conforming to the requirements of ASTM A615-76, Grade 40. When laced in the work, it shall be free from loose rust, scale, dirt, paint, oil, and other foreign material.
- B. All steel shall be placed and fastened according to the specifications in Section 415-5, Department of Transportation Standard Specifications.

## 2.05 BRICK

- A. All bricks for drainage structure shall be first class, dense free from cracks, true in shape, have square edges, and a clear ringing sound when struck.
- B. Clay brick shall be hard burned, sound and burned entirely through.
- C. Brick of any one make shall not vary more than 1/16 inch in thickness, nor more than 1/8 inch in width or length. The average amount of water absorbed by the brick, after being thoroughly dried and then immersed for 24 hours, shall not exceed 8 percent.
- D. Concrete brick shall conform to the requirements of Article 949-2 of the Department of Transportation Standard Specifications.

## 2.06 MORTAR

- A. Cement Mortar shall be of Portland Cement and sand, mixed in the proportions of one part cement to three parts of sand. All the materials shall pass the No. 8 sieve, and be uniformly graded from coarse to fine. At the option of the Contractor, hydrated lime, in an amount not to exceed ten percent of the amount of cement used, may be added to the mortar. No hydrated lime shall be used in conjunction with packaged masonry cement, and packaged masonry cement shall not be used if it has been stored for over six months. Cement mortar shall be mixed dry and wetted to proper consistency for use. Nor mortars left standing for more than one hour shall be used.

## 2.07 CASTINGS

- A. Castings for inlet grates, frames, covers, and structure tops shall be as shown in the plans and conform to Department of Transportation Standard Specifications.
- B. Iron castings shall conform to ASTM 48 and may be of the No. 20 classes. All frame covers shall have "pick-up" holes, non-skid surface and 2" raised or depressed identification letters and numbers.

## 2.08 PIPE BEDDING

- A. Pipe Bedding Material shall be select granular materials which are inorganic and well graded. If pipe is to be installed in wet areas or the Engineer determines the soil to be unstable, a six inch bed of No. 57 aggregate may be required.

## 2.09 UNDERDRAINS

- A. Any subsurface drainage systems shall be installed according to the locations and dimensions shown on the plan sheets. All materials and construction shall conform to Section 440 of Department of Transportation Standards and Specifications.

## PART III - EXECUTION

### 3.01 PIPE TRENCHES

- A. Pipe Trenches shall be of necessary widths for the proper laying of the pipe, and the banks shall be as nearly vertical as practicable. The bottom of the trenches shall be excavated to a depth 6 inches below the outside bottom of the pipe barrel. The resulting excavation shall be backfilled with pipe bedding material up to the level of the lower one-third of the proposed pipe barrel. This backfill material shall be tamped and compacted to provide proper bedding for the pipe and shall then be shaped to receive the pipe. Bell holes and depressions for joints shall be dug after the trench bottom has been graded and in order that the pipe rest upon the prepared bottom for as nearly its full length as practicable, shall be only of such length, depth, and width as required for properly making the particular type of joint.
- B. Removal of Unsuitable Material. When rock, boulders or other hard, lumpy or unyielding materials are encountered in the trench bottom, they shall be removed to a depth at least 12 inches below the bottom of the pipe. Muck or other soft material considered to be by the Engineer to be unsuitable as foundation for the pipe shall be removed to the depth required for obtaining a firm foundation. All material removed must be replaced by an acceptable bedding material approved by the Engineer or his representative. Removal and replacement of the unsuitable material is entirely the responsibility of the Contractor and he shall bear all costs thereof.
- C. Pumping, Sheet piling and Bracing. Where sheet piling and bracing are necessary to prevent caving of the trench sidewalls or sidewalls of excavation for other structures, and to safeguard the workmen, the trench or excavation for other structures shall be dug to such width that the proper allowance is made for the space occupied by the sheet piling and bracing.

### 3.02 BACKFILLING FOR PIPE CULVERTS, STORM SEWERS AND DRAINAGE STRUCTURES

- A. After the bedding has been prepared and the pipe installed, backfilling of pipe trenches shall be done in strict accordance with Department of Transportation Standards and Specifications, Section 125-8.3, which requires backfilling to be done in three stages.
1. The first stage of backfilling requires that suitable fill be placed in six inch layers (compacted thickness) up to the haunches of the pipe. Compaction shall be achieved via hand compaction or mechanical tampers assuming that mechanical compaction does not disturb or damage the pipe.
  2. The second stage of compaction applies to the material along the sides of the pipe to a point at least a foot above the top of the pipe. It shall be installed in six-inch layers (compacted thickness) and be compacted with appropriate equipment.
  3. The material to be installed in the trench above the second stage to the bottom of the subgrade or the finished surface of the embankment shall comprise the third stage of compaction. It shall be placed in one foot layers and compacted with appropriate equipment.

### 3.03 DENSITY REQUIREMENTS

- A. Those requirements listed in Department of Transportation Standards and Specifications Section 125-8.32 shall be adhered to.
1. All backfill in roadway areas and around structures shall be compacted to 98% modified proctor.
  2. The only areas not requiring 98 percent modified proctor compaction are those outside a 2 (horizontal) to 1 (vertical) slope downward from the roadway shoulder or back of the curb where no vehicular traffic shall pass. In these areas where backfill depth is less than ten feet over top of the pipe, the degree of compaction throughout shall be approximately equal to that of the soil adjacent to the pipe trench.
  3. Where the fill depth is greater than ten feet over the top of the pipe, the fill placed around the pipe to one foot over top of the pipe shall be compacted to the density of surrounding soils.
  4. The remainder shall be compacted to a density approximately equal to that of the soil adjacent to the pipe trench.

### 3.04 BACKFILL UNDER WET CONDITONS

- A. In instances where dewatering procedures are insufficient to adequately dewater trenches, the backfill procedures prescribed in Section 125-8.3.3 of Department of Transportation Standards and Specifications may be followed, if approved by the Engineer or his representative.
  - 1. Under wet conditions a 6 - 8 inch layer of No. 57 aggregate shall serve as bedding material.
  - 2. After pipe is properly bedded, soil of the A-3 soil classification shall be placed and hand compacted until such an elevation is reached that the soils moisture content will permit the use of mechanical tampers.
  - 3. At this point normal backfill methods and materials may be used.

### 3.05 PIPE LAYING AND JOINTING

- A. The grade as shown or indicated on the drawings is that of the invert and to which the work must conform. Any variation from this grade will be deemed sufficient reason to cause the work to be rejected and rebuilt to the Contractor's expense. If any difficulty is found in fitting the pieces together, this fitting is to be done on the surface before laying the pipe, and the tops plainly marked in the order in which they are to be laid. No pipe is to be trimmed or chipped to fit. Pipes having defects that have not caused their rejection are to be so laid that these defects will be in the upper half of the sewer. A bell hole is to be cut for each piece. Each piece of pipe is to be solidly and evenly bedded and not simply wedged up. Before finishing each joint, some suitable device is to be used to find that the inverts coincide. Each pipe shall be laid to the line and grade shown or indicated on the drawings. All pipes shall be laid with bells or grooves uphill. As the pipes are laid throughout the work, they must be thoroughly cleaned and protected from dirt and water. No length of pipe shall be laid until the two preceding lengths have been thoroughly embedded in places so as to prevent any movement or disturbance of the finished joint. No walking on or working over the pipes after they are laid, except as may be necessary in tampering earth and refilling, will be permitted until they are covered to a depth of one foot. Whenever the pipe laying is discontinued, as at night, the unfinished end is to be securely protected from displacement by caving of the banks or from other injury and a suitable stopper is to be inserted therein.
- B. Reinforced Concrete Pipe Joints. Joints for reinforced concrete pipe storm sewer or culverts shall be made using an approved preformed or molded rubber gasket. The gasket and the surface of the pipe joint, including the gasket recess, shall be clean and free from grit, dirt, or other foreign matter at the time the joints are made. In order to facilitate closure of the joint, application of an approved

vegetable soap lubricate immediately prior to closing of the joint will be permitted.

- C. Reinforced Concrete Elliptical Pipe Joint. Pipe shall be laid with the longest dimensions placed horizontally. The tongue and groove sections of all pipe joints shall be pre-coated with Koppers 300 M, or approved equal. Before joints are connected, bituminous stripping material ("Ram-Nek" or equal) shall be placed on the face of the tongue section of each pipe joint. The "Ram-Nek" should be placed around the entirety of the joint circumference and the strips shall overlap one another at least four inches. After then connection is made, non-woven filter fabric, Typar 3401, or approved equal, shall be wrapped around the pipe joint with a minimum of 18 inches of material on either side of the joint.

### 3.06 DRAINAGE STRUCTURES

- A. Drainage structures shall be built at points shown on the drawings and in strict accordance with those shown on the drawings, or as designated by the Engineer. Construction details regarding drainage structures may be referred to in the Florida Department of Transportation "Roadway and Traffic Design Standards," latest edition. All standards regarding construction requirements and safety considerations shall be complied with and are the responsibility of the Contractor. Any discrepancies between the plan drawings and Department of Transportation Standards shall be referred to the Engineer or his representative.
- B. Excavation for drainage structure shall be sufficient to provide a clearance between their surfaces and the face of the excavation or sheeting, if used, of not less than 12 inches. Backfill shall be placed as specified herein before. Unsuitable material uncovered at the footing elevation shall be excavated to suitable material and the excavation backfilled with pipe bedding material to the required elevation.
- C. Brick masonry for manholes, inlets or other structures shall be built of brick and mortar of the specified quality. Every fifth course of brick shall be laid as stretchers, the remainder being laid as headers. Every brick shall have full mortar joints on the bottom and sides which shall have been formed at one operation by placing sufficient mortar on the head and forcing the brick into it. Horizontal joints shall not exceed 1/4 of an inch. All brick shall be thoroughly drenched with water immediately before being laid.
- D. Precast inlet boxes or other structures may be used if approved by the Engineer. Castings and frames and grates of all structure where applicable shall be placed to final grade by the use of a leveling course of brick and mortar if necessary or may be set in mortar only provided the depth of mortar is not more than the depth of a course of brick and mortar.

3.07 ADDITIONAL WORK

- A. Additional items of construction necessary for complete installation of the system shall conform to specific details on the drawings and shall be constructed of first-class materials conforming to the applicable portions of these specifications. All ends of sewer lines that are pending future connection shall be temporarily plugged and their end location marked properly with location markers.
- B. Connections to existing structures shall be made without permanent damage to the existing work. Pipe openings cut in the existing structure walls shall be made water-tight with an approved grout and mortar.

END OF SECTION

## SECTION 02900A

### GRASSING, MULCHING AND SODDING

#### PART I - GENERAL

##### 1.01 WORK INCLUDED

- A. The work specified in this section consists of grassing, or of grassing and mulching, on slopes, shoulders and other areas. The work of grassing shall include seeding and fertilizing; also watering as required. Any of the items of work covered by this section may be eliminated from the contract, at the discretion of the Engineer. Sodding is included herewith and shall conform to the lines and grades as shown on the plans.

#### PART II - MATERIALS AND EQUIPMENT

##### 2.01 MATERIALS AND EQUIPMENT

- A. The materials used for the work in this section shall conform to the requirements hereinafter specified.

##### 2.02 SOD

- A. Sod shall be well matted with roots. St. Augustine shall be used in residential areas. Bahia shall be used in the right-of-way areas, not covered by St. Augustine grass.
- B. The sod shall be taken up in commercial-size rectangles, preferably 12-inch by 12-inch, except where 6-inch strip sodding is called for.
- C. The sod shall be sufficiently thick to secure a dense stand of live grass. The sod shall be live, fresh and uninjured, at the time of planting. It shall be planted as soon as possible after being dug and shall be shaded and kept moist from the time it is dug until it is planted. The sod shall be approved by the Engineer before placing.
- D. Source Requirements for Sod and Mulch. No mulch material or sod shall be used which is not certified as being free of the imported fire ant, and before any mulch or sod is brought to the project, the Contractor will be required to furnish the Engineer a written certification and clearance, from pest control officials of either the State or the Federal Department of Agriculture, verifying that the materials are being obtained from an area outside of the zone of quarantine of the imported fire ant, or that they are free of the imported fire ant.

## 2.03 WATER

- A. The water used in the grassing operations may be obtained from the reclaimed water system.
- B. The water shall be free of excess and harmful chemicals, acids, alkalis, or any substance which might be harmful to plant growth or obnoxious to traffic.
- C. Salt water shall not be used.

## 2.04 EQUIPMENT

- A. Fertilizer Spreader
  - 1. The device for spreading dry fertilizer or for spraying liquid fertilizer shall meet the approval of the Engineer.
- B. Seed Spreader.
  - 1. The seed spreader shall be an approved mechanical head spreader or other approved type of spreader and may be integral with the cultipacker roller equipment specified below.
- C. Equipment for Cutting Mulch into Soil.
  - 1. The mulching equipment shall be a rotovator, or other equipment determined by the Engineer to be equally suitable for cutting the specified materials uniformly into the soil and to the required controlled depth.
  - 2. Harrows will not be allowed.
- D. Rollers
  - 1. A cultipacker, traffic roller, or other roller approved by the Engineer, will be required for rolling the grassed and mulched areas.
- E. Water-Metering Devices
  - 1. The vehicle used for applying the water to the grassed areas shall be equipped with an approved metering device installed at such point on the vehicle as to measure the water at the time of its being applied to the grassed areas.

## PART III - EXECUTION

### 3.01 TIME OF BEGINNING OPERATIONS

- A. Whenever a suitable length of roadway is completed and ready for planting the Contractor shall, if directed by the Engineer, proceed at once with the planting of the available shoulder or embankment areas.

### 3.02 WEATHER AND SOIL LIMITATIONS

- A. Fertilizing, seeding or mulching operations will not be permitted when wind velocities exceed 15 miles per hour.
- B. Seed shall be sowed only when the soil is moist and in proper condition to induce growth.

### 3.03 SOIL MANIPULATION

- A. All soil manipulation shall be done at right angles to the direction of slope.

### 3.04 WATERING

- A. The soil shall be maintained in a moist condition for a period of at least two weeks after the planting.

### 3.05 APPLYING AND MIXING FERTILIZER

#### A. Rate of Application

1. At the Contractor's option either dry or liquid commercial grade fertilizer may be used.
2. The rate of application for dry fertilizer shall be 800 to 1000 pounds per acre, with application in the upper range for sandy soils in the lower range for loamy soils. The exact rate will be set by the Engineer.
3. Liquid fertilizer shall be applied at an equivalent rate which will provide the same amount of plant food as required for dry fertilizer (or at approximately 74 to 92 gallons per acre).

#### B. Application

1. The fertilizer shall be spread or sprayed uniformly over the area to be grassed by use of the approved distributing device, except that on steep slopes or other areas where machine-spreading may not be practicable, spreading may be done by hand or by hose if the Engineer so directs.

2. Immediately after dry fertilizer is spread, it shall be harrowed in and mixed with the soil to a depth of approximately four inches.
3. When liquid fertilizer is sprayed, the soil, if dry, shall be moistened by sprinkling before the liquid fertilizer is applied not later than seven days after the seed is in place.

### 3.06 MULCHING

#### A. When Dry Mulch is Used

1. When mulching is called for, approximately two inches, loose thickness, of the straw or hay material shall then be applied uniformly over the grassing area, and the mulch material cut into the soil with the equipment specified, so as to produce a loose mulch thickness of three to four inches.
2. Care shall be exercised so that the materials are not cut too deeply into the soil.

#### B. When Green Mulch is Used

1. When green mulch is used, the green mulch shall be incorporated into the soil not later than two days after being cut, and not artificial watering shall be done before the mulch is applied.
2. It shall be spread in a layer of approximately two inches loose thickness, and cut into the soil with the equipment specified.
3. The material shall not be cut too deeply into the soil.

### 3.07 SEEDING

- A. Soon after the mulch material has been cut into the soil, and while the soil is still loose and moist, the seed shall be scattered uniformly over the grassing area.

The rate of spread for the seed shall be as follows:

1. Where mulching is not called for, or where dry mulch is used, the rate shall be 60 pounds per acre. In the period from March 15 to October 15 the seed mixture shall be 30 pounds of Bahia and 30 pounds of Bermuda. In the remainder of the year, the mixture shall be 20 pounds each of Bahia, Bermuda and rye seed.
2. When green mulch is used, the required rate of spread shall be reduced to 45 pounds per acre, because of the faster growing rate of the green mulch as

compared with that of the seeds. The seed mixture shall be 22-1/2 pounds of Bahia and 22-1/2 pound of Bermuda, except that in the period October 15 to March 15 the mixture shall be 15 pounds each of Bahia, Bermuda and rye grass seed.

3. Seeding may be done in conjunction with the rolling if the equipment used is designed for that purpose.
4. Rolling. Immediately after completion of the seeding, the entire grassed or mulched area shall be rolled thoroughly with the equipment specified. At least two trips over the entire area will be required.

### 3.08 SODDING

- A. Wherever sodding is indicated on the plans, it shall include all of the requirements of this section except "Mulching".

### 3.09 MAINTENANCE

- A. The Contractor shall be responsible for keeping the ground moist by watering until an acceptable stand of grass is grown. He will also be required to repair at his own expense any damage due to washouts, erosion or other causes which might occur prior to final acceptance of this work.

END OF SECTION

SECTION 03300  
CAST-IN-PLACE AND POURED CONCRETE

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. The work included under this section consists of furnishing all materials, forms, transportation and equipment, and performing all necessary labor to do all the plain and reinforced concrete work shown on the Drawings, or incidental to the proper execution of the work, or as herein specified.
- B. Composition: Concrete shall be composed of cement, fine aggregate, coarse aggregate, and water so proportioned and mixed as to produce a plastic workable mixture in accordance with all requirements under this section suitable to the specific conditions of placement.

1.02 SUBMITTALS – All materials specified shall be certified by the producer or manufacturer that the furnished material meets the specific requirements of the specifications. Concrete mix designs shall be submitted for approval prior to placement.

1.03 CODES AND STANDARDS – ACI 301 "Specifications for Structural Concrete for Buildings", ACI 318" Building Code Requirements for Structural Concrete", ACI 347 "Recommended Practice for Concrete Formwork"; ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete"; comply with applicable provisions except as otherwise indicated.

1.04 TESTING

- A. Air content shall be in accordance with American Society for Testing Materials Standard Methods C 173, one for each set of compressive strength specimens.
- B. Sampling of freshly mixed concrete shall be in accordance with ASTM C172.
- C. Slump: ASTM C-143
- D. Test results will be reported in writing to Engineer, Contractor, Owner and Concrete producer on same day tests are made.
- E. Laboratory Reports: Submit 2 copies of laboratory test or evaluation reports for concrete materials and mix designs.

PART 2 - MATERIALS AND EQUIPMENT

2.01 PORTLAND CEMENT – Shall comply with the standard specifications for Portland Cement, A.S.T.M. designation C-150, Type II, or Type III (high-early), where indicated on drawings.

2.02 CONCRETE AGGREGATE – Shall conform to standard specifications for concrete aggregate, A.S.T.M. Designation C-33 or to ASTM C-330. Maximum size of aggregate shall not exceed one-fifth of the narrowest dimension between reinforcing bars.

A. Fine Aggregate - Fine aggregate shall be clean, hard, strong, durable, uncoated particles of natural sand known as Lake Wales, Interlachen, or approved equal. The source, composition, quality and gradation of the fine aggregate shall be subject to the approval of the Engineer. Samples of the sand shall be furnished, together with certified copies of the gradation and analysis from the recognized testing laboratory.

1. The weight of extraneous or deleterious substances shall not exceed the following percentages:

Loss by Decantation	3%
Shale	1%
Clay Lumps	1%
Coal and Lignite	1%

2. The fine aggregate shall be reasonably well graded from coarse to fine and when tested by means of laboratory sieves shall meet the following requirements in percent of total weight:

<u>Total Retained On</u>	<u>Percent Retained</u>
No. 4 Sieve	0 - 5
No. 10 Sieve	3 - 30
No. 30 Sieve	30 - 70
No. 50 Sieve	65 - 95
No. 100 Sieve	95 - 100

Deficiencies in the percentages of the fine aggregates passing the No. 50 and No. 100 Sieves may be remedied by the addition of pozzolanic or cementitious materials excepting Portland cement. Such materials must meet the approval of the Engineer.

B. Coarse Aggregate.

1. Coarse aggregate shall consist of hard, tough, durable components free from adherent coatings and vegetable matter, and shall not contain soft, friable, thin or elongated particles in quantities considered deleterious by the Engineer. Coarse aggregate shall be properly graded from fine to coarse to produce concrete of desired strength, density, and workability. The source, composition, quality and gradation of the coarse aggregate shall be subject to the approval of the Engineers. Samples of the coarse aggregate shall be furnished together with certified copies of the gradation and analysis from a recognized testing laboratory.

2. All coarse aggregate shall be washed and shall be free from disintegrated pieces, salt, alkali, vegetable matter and adherent coatings. The total percentage of all deleterious substances shall not exceed 5 percent by weight. The substances designated shall not be present in excess of the following amounts.

Loss by Decantation	1%
Clay Lumps or Other Soluble Materials	3%
Soft Fragments	5%

3. Where the cover over reinforcing is 2 inches or more, the maximum size of aggregate shall be 12 inches. Where the cover over reinforcing is less than 2 inches, the maximum size of aggregate shall be 3/4 inch. The maximum size of aggregate shall not exceed one-fifth of the narrowest dimension between forms nor three-fourths of the minimum clear spacing between reinforcing bars. The grading of the coarse aggregate in the concrete shall be within the following limits.

Percent Passing

Maximum Size Square Mesh Screen	97 - 100%
2 Maximum Size Square Mesh Screen	40 - 70%
No. 4 Sieve	0 - 6%

2.03 WATER - Water shall be clean and free from oil, acids, alkalis, organic materials or other injurious substances.

2.04 REINFORCEMENT

- A. Reinforcing Bars: ASTM A615, Grade 60, deformed bars of USA manufacture.
- B. Welded Wire Fabric: ASTM A185, gauges, spacing and dimensions as indicated.
- C. Metal Bar Supports: CRSI MSP-1, Chapter 3, Class 2, Type B, Stainless Steel Protected Bar Supports, or otherwise approved by the Engineer. Use concrete supports for reinforcement in concrete placed on grade.
- D. Tie Wire: 16 gauge minimum, black, soft annealed.
- E. Coupler Splice Devices: Cadweld tensions couplers, capable of developing the ultimate strength of the bar as manufactured by Erico Products, Incorporated, Solon, Ohio, or equal.
- F. Epoxy coated or FRP rebar shall be used for all marine applications.

## 2.05 FORM WORK

- A. Lumber: Douglas Fir or Larch, No. 2 grade, seasoned and surfaced on four sides.
- B. Plywood: Plyform, Class 1, BB-Exterior type, mill oiled and edge sealed, with thickness not less than 3/4 inch.
- C. Medium Density Overlay (MDO) Plywood Forms: PS-1, B-B High Density Concrete Form Overlay, Class I, unoiled.
  - 1. Butt form panels, make contact surface fully flush and seal butting holes with sponge form tape. Chamfer edges of beams and ceilings.
  - 2. Where MDO plywood is used to form beams, do not use MDO plywood that has been patched or damaged.
- D. Drip Forms: Varnished ponderosa pine or equally rigid non-staining plastic, 2 inch wide on each leg.
- E. Steel Forms. Uncoated steel, 3/16 inch minimum thickness, fabricated to close tolerances, protected only by the specified release agent, braced so as not to bend, dent, or dimple under wet concrete load, vibrator impact, and tool impact. Maintain steel form in rust-free condition by use of steel wool and light grinding, followed by coats of specified release agent. Use forms that can be adjusted into true alignment without stops or ridges.
- F. Glass Fiber Reinforced Plastic (FRP) Forms: Smooth coated forms, braced so as not to bend, dent or dimple under wet concrete loads, vibrator impact and tool impact, and at least 0.11 inch thick. Design forms for external bracing at piers and columns, without use of form ties.
- G. Plugged Cone Form Ties: Rod type, with ends or end fasteners which can be removed without spalling the concrete and which leave a hole equal in depth to the required reinforcement clearance. Form ties shall be of a design in which the hole left by the removed end or end fastener is easily filled to match the surface of the hardened concrete. Provide removable cones 13 inches in diameter by 12 inches deep. Provide preformed mortar plugs to match the color of the concrete, recessed 3 inch, adhered with an approved two part epoxy.
- H. Weep Hole Forms: PVC polyethylene, or ABS pipe, matching color of the concrete, 4 inch inside diameter, with outlet projecting 12 inches from wall and cutoff in a plane parallel to it.
- I. Circular and Elliptical Column Forms: Fabricate of two pieces, clamped watertight using gaskets and without horizontal joints. Install horizontal construction joints only where indicated or as directed by the Engineer.

- J. Beam Forms: Provide in one length without form joints and suitable for cambering up to 1/160 of span without distortion of profile or opening of seams.
- K. Forms of Hammerhead Pier Caps: Provide in one length with adjustable soffits, bulkheads and screens as necessary to accommodate different hammerhead beam configurations. Provide no construction joints in hammerhead pier caps. Where three or fewer identical hammerhead pier caps occur within a line section, steel braced HDO plywood forms may be substituted for steel forms if:
1. Working drawings of formwork are submitted.
  2. Internal form ties are regularly spaced no less than 48 inches each way, and are made watertight.
  3. Form ties have removable cones, which are filled to match concrete.
  4. Joints in panels are fully watertight.
  5. The resulting surface matches the appearance of steel formed hammerhead caps, with no visible discoloration due to form leakage.
- L. Styrofoam Board: Expanded polystyrene extruded into board form, closed cell, moisture resistant, capable of maintaining indicated clear space between concrete structures.
- M. Control Joint Filler: Use epoxy joint filler equal to BurkEpoxy Joint Filler to fill voids left by saw cuts and to resist against spalling caused by vehicle traffic in concrete slabs.
- N. Inserts: Galvanized cast steel or galvanized welded steel, complete with anchors to concrete and fittings such as bolts, wedges and straps. Provide hanger inserts spaced to match grid of suspended ceilings.
- O. Shoring: As designed and executed by Contractor to support all loads.
- P. Chamfer Strips: Polyvinyl strips designed to be nailed in the forms to provide a 3/4 inch chamfer at exposed edges of concrete members.
- Q. Form Release Agent: A blend of natural and synthetic chemicals that employs a chemical reaction to provide quick, easy and clean release of concrete from forms, and equal to Eucoslip, by the Euclid Chemical Company, or Release #1, by The Burke Company. Use a non-staining release agent that leaves the concrete with a paintable surface.

## 2.06 ADMIXTURES

- A. Air Entraining Admixture: ASTM C260.

B. Water Reducing and Retarding Admixture:

1. Concrete Without Superplasticizer:

- a. Water Reducing Admixtures: ASTM C494, Type A, equal to Eucon WR-75 by the Euclid Company, Pozzolith 200N by Master Builders, Plastocrete 161 by Sika Chemical Corporation, and containing no calcium chloride.
- b. Water Reducing and Retarding Admixtures: ASTM C494, Type D, equal to Eucon Retarder-75 by the Euclid Company, Pozzolith 100 XR by Master Builders, Plastiment by Sika Chemical Corporation, and containing no calcium chloride.
- c. Accelerating Admixtures: ASTM C494, Type C or E, equal to Accelguard 80 by the Euclid Company, Darex Set Accelerator by W.R. Grace, and containing no calcium chloride.

2. Concrete with Superplasticizer:

- a. Water Reducing, High Range Admixtures: ASTM C494, Type F or G, equal to Eucon 37 by the Euclid Company, Rheobild 716 by Master Builders, Daracem 100 by W.R. Grace, Sikament by Sika Chemical Corporation, and consisting of a second generation admixture, free of chlorides and alkalis (except for those attributable to water) composed of a synthesized sulfonated complex polymer, enabling the concrete to maintain its rheoplastic state in excess of two hours if necessary.
- b. Manufacturer's Job Site Representation: Provide the services of a competent field service representative from the manufacturer of each of the admixtures selected for use to provide at the job site advice and consultation on the use of the admixture materials, including the effect on the concrete in place, including recommending maximum discharge time for superplasticizer method and procedure to induce superplasticizer into mixer, quantities of admixtures to be used if variations are required because of temperature/humidity, wind or other environmental considerations, and to be available on short call at any time requested by the Owner, Contractor, or concrete producer.

3. Concrete used in Marine Applications:

- a. Micro Silica admixtures shall be used for concrete installed in marine and coastal applications. Concrete designs shall meet the appropriate requirements of EN206-1, BS 8500 and BS 5075. Contractor shall

provide plant certification for all mix designs used in marine and coastal applications.

## 2.07 GROUT

- A. Nonshrink, Nonmetallic Grout: The Burke Company's Non-Ferrous, Non-Shrink Grout, Sauereisen F-100 Level Fill, Master Builders Masterflow 713, Euclid NS Grout, or equal pre-mixed type.
- B. Nonshrink Metallic Grout: The Burke Company's Metallic Spec Grout, Master Builders Embeco 636 Grout pre-mixed type, or equal.
- C. Epoxy Grout: Sikadur 42 Grout-Pak, or equal, for grouting sleeves for anchor bolts, etc.
- D. Clarifier Basin Grout: Class B concrete of coarse aggregate shall pass the 3/4 inch sieve.

2.08 MEMBRANE CURING COMPOUND. Membrane curing compound shall be wax-free, pigmented, 100 percent resin base compound such as A.C. Horn's "Horncure 30 C", Hunt Process Corporation; Southern's "All-Resin", or equal.

2.09 BONDING AGENT. Bonding agent shall be Colma Fix, as manufactured by Sika Chemical Corporation, of Passaic, New Jersey or equal. To be considered equal, the material must be a two-component epoxy-polysulphide resin system, and it must have a demonstrated record of strong adhesion to both wet and dry concrete in either the hardened or the plastic state. It must also be of equal strength.

## 2.10 ACCESSORIES

- A. Precast Concrete Block Supports for Reinforcing Bars: Comply with ACI 315. Provide blocks with No. 4 dowels bent 90° to support top bars.
- B. Membrane: 6 mil polyethylene film.
- C. Water Stops: Polyvinyl chloride meeting all requirements of U.S. Army Corps of Engineer's Specification CRD-C-572 and equal to Burke Water Stops as manufactured by The Burke Company. Provide flat dumbbell type and center bulb type, 9 inches x 3/8 inch at wall thickness of 12 inches or greater, and 6 inches x 3/8 inches at wall thickness less than 12 inches. Provide 6 inch split-ribbed with center bulb type at connections of new concrete structures with existing concrete. Provide water stops as indicated on the Drawings.
- D. Prefomed Expansion Joint Filler:
  - 1. Bituminous type conforming to the requirements of ASTM D994.

2. Nonextruding type, self expanding cork, 3/4 inch thick or as otherwise shown on the Drawings, conforming to the requirements of ASTM D1752, Type III, and compatible with the specified joint sealant compound.
- E. Joint Sealant: A multipart gray polyurethane sealant, meeting U.S. Federal Specification TT-S-00227E (3) Type 1, Class A self-leveling for horizontal joints, and Type II, Class A, non-sag for vertical joints, and recommended by the manufacturer for continuous immersion in water. Provide sealants as manufactured by Products Research and Chemical Corporation, Mameco International, The Burke Company, W.R. Meadows, or equal.
- F. Tongue and Groove Joint Forms: 24 gauge steel forms complete with steel stakes and splice plates, designed for joints not to receive a poured seal, and equal to Burke Keyed Kold Joint as manufactured by The Burke Company.
- G. Inserts: Galvanized steel to fit the proposed hanger or support.
- H. Mortar for Repair of Concrete: Same materials as used for concrete, except omit coarse aggregate and use not more than one part cement to two and on-half parts sand by damp loose volume. Use no more mixing water than is necessary for handling and placing.
- I. Burlap Mats: Conform to AASHTO Specification M182.
- J. Epoxy Bonding Agent: Euco #452, BurkEpoxy MV, Sikadur Hi Mod, Concessive 1001-LPL, or equal.
- K. Powered Epoxy Coating for Anchor Bolts: Powdered epoxy resin as manufactured by the 3M Company, Scotchkote No. 213, Armstrong No. R349.

## 2.11 CONDUITS AND PIPES EMBEDDED IN CONCRETE

- A. Conduits, pipes and sleeves of any material not harmful to concrete shall be permitted to be embedded in concrete with approval of the engineer, provided they are not considered to replace structurally the displaced concrete.
- B. Conduits and pipes of aluminum shall not be embedded in structural concrete unless effectively coated or covered to prevent electrolytic action between aluminum and steel.
- C. Conduits and pipes, with their fittings, embedded within a column shall not displace more than 4% of the area of cross section on which strength is calculated or which is required for fire protections.
- D. Conduits, pipes, sleeves passing through a slab, wall or beam shall not impair significantly the strength of the construction.

E. Except when plans for conduits and pipes are approved by the engineer, conduits and pipes embedded within a slab, wall, or beam shall satisfy the following:

1. They shall not be larger in outside dimension than one-third overall thickness of slab, wall, or beam in which they are embedded.
2. They shall not be spaced closer than three diameters or widths on center.

## 2.12 PIPES CONTAINING LIQUID, GAS, OR VAPOR

A. Pipes that will contain liquid, gas or vapor may be embedded in structural concrete under the following conditions:

1. Pipes and fittings shall be designed to resist effects of the material, pressure, and temperature to which they will be subjected.
2. No liquid, gas, or vapor, except water not exceeding 90°F (32C) nor 50 psi (345 kPa) pressure, shall be placed in the pipes until the concrete has attained its design strength.
3. Concrete cover for pipes, conduits and fittings shall be not less than 12 inches (38 mm) for concrete exposed to earth or weather or in contact with ground.
4. Reinforcement with an area of not less than 0.002 times area of concrete section shall be provided normal to piping.
5. Piping and conduit shall be so fabricated and installed that cutting, bending or displacement of reinforced from its proper location will not be required.

## PART 3 - EXECUTION

### 3.01 PROPORTIONING.

- A. The proportions of aggregate to cement shall be such as to produce a thoroughly plastic mixture which will work readily into the corners and angles of the forms and around the reinforcement but without permitting the materials to segregate or excess free water to collect on the surface. The percentage of sand shall not be less than thirty (30) nor more than fifty (50) percent of the total weight of the aggregate.
- B. The total content, including the surface water contained in the aggregate, shall not exceed 5.7 gallons per sack of cement. The slump shall not exceed four (4) inches. Air-entraining admixture shall be Darex AEA as manufactured by the Dewey and Almy Chemical Company.
- C. The amount of air entrained in the freshly mixed concrete shall not be less than three (3) percent nor more than six (6) percent. The minimum cement content in sacks per cubic yard of concrete shall not be less than six (6) sacks per cubic yard for Class "A" concrete.

D. Concrete materials shall be accurately measured by weight. Measurement of materials for ready-mixed concrete shall conform to the "Standard Specifications for Ready-Mixed Concrete", (A.S.T.M. designation C-94).

1. Class "A" concrete for all structures shall have minimum compressive strength of 4000 psi at 28 days.
2. Class "B" concrete for sidewalks shall have minimum compressive strength of 3000 psi at 28 days.
3. All concrete shall be Class "A" unless otherwise shown on the drawings.

### 3.02 MIXING AND PLACING

A. Concrete shall be mixed, conveyed and deposited in accordance with the "A.C.I. Building Code" (A.C.I. 318).

B. Prior to placing any concrete, the Contractor shall submit for the Engineer's approval a design mix, calculated by a recognized testing laboratory, and using the approved aggregates to produce a workable mix of the desired strength, together with certified copies of 7 days and 28 day tests of cylinders taken from concrete made according to the design mix. The mixes shall be designed to secure concrete having a minimum compressive strength at age 28 days.

C. Ready-mixed concrete delivered shall be accompanied by delivery tickets showing the following:

- |                                     |                    |
|-------------------------------------|--------------------|
| 1. Date and time leaving plant      | Additives (if any) |
| 2. Type of cement and weight        | Site arrival time  |
| 3. Quantity of water and time added | Site leaving time  |

D. Concrete.

1. Ready-mixed concrete shall be used. All mixing requirements specified herein shall be enforced, and the Owner's laboratory representative and the Engineer shall have free access to the mixing plant at all times.
2. Except for materials and/or procedures otherwise specified herein, ready-mixed concrete shall be mixed and delivered in accordance with the requirements of ASTM C 94.
3. No water shall be added to the concrete after it leaves the plant except where part of the design water was purposely omitted at the plant, and then only as approved by the Engineer.

E. Mixer Speed.

1. Neither the speed of any mixer nor the quantity of material loaded into any mixer shall exceed the recommendations of the manufacturer.
2. Excessive over-mixing, required additions of water to preserve the required consistency, shall be cause for rejection of the batch.
3. Concrete shall not remain in a transit mixer or agitator truck more than 90 minutes after the water has been introduced, and not for more than 45 minutes if any approved retarding agent is not used.
4. Minimum mixing time shall be 50 revolutions of drum at rated speed.

#### F. Measurement.

1. Equipment necessary to determine and control the actual amounts of all materials entering the concrete shall be provided by the concrete manufacturer.
2. All materials shall be measured by weight, except that water may be measured by volume calculated at 8-1/3 pounds per gallon. One bag of cement will be considered as 94 pounds in weight.

#### G. Mixes.

1. Mix Design: Conform to ACI 318, Section 4.3. Submit data on consecutive tests and standard deviation.
2. Maximum Water-Cement Ratio:
  - .37 (lbs/lb) - Concrete with superplasticizer
  - .38 (lbs/lb) – Concrete in Marine Environments
  - .45 (lbs/lb) - Class A concrete without superplasticizer
  - .55 (lbs/lb) - Class B concrete without superplasticizer
  - .65 (lbs/lb) - Class C concrete without superplasticizer
3. Air Content: 5 percent plus or minus 1.5 percent (Class A and B).
4. Slump: 4 inches plus or minus 1 inch for Class A and B without superplasticizer.
  - 7 inches plus or minus 1 inch for Class A and B with superplasticizer.
  - 8 inches plus or minus 1 inch for tremie concrete or as specified by details.

#### H. Placing Concrete.

1. All concrete shall be placed in clean, damp forms that are not hot to the touch.
2. To prevent segregation, concrete shall be deposited as nearly as practicable in final position and not allowed to drop freely more than necessary and in no case more than five feet, except in an approved funnel or tremie. All concrete shall be placed during daylight unless otherwise authorized at least four hours in advance. Where the reinforcing steel above the top of the concrete being placed becomes coated with laitance or partially set-up concrete, all such concrete shall be removed from the reinforcing steel prior to placing concrete around the bars.
3. Concrete shall be packed carefully and tightly around pipe and other items to secure maximum adhesion.
4. Concrete shall be placed in layers not over 12 inches deep before compacting. Concrete shall be compacted by internal vibrating equipment supplemented by spading and hand-rodging between reinforcing steel and form to eliminate air bubbles and honeycomb. Vibrators shall not be used to move the concrete laterally inside the forms. Duration of vibration shall be limited to the time necessary to provide satisfactory consolidation without causing segregation, not less than five and not more than 15 seconds per square foot of exposed top surface. The vibrator shall be constantly relocated and shall be placed in each specific spot only once for each layer. The Contractor shall take steps to assure that sufficient personnel are available to devote full time to operating vibrator, spading and rodging.
5. Wall concrete shall be placed in layers as indicated above, with the first lift preceded by a 1-inch minimum layer of 1:2-1/2 cement-sand grout, with a 6-inch to 8-inch slump, placed on existing concrete not more than 20 minutes before concrete placement. The surface of previously placed hardened concrete shall be clean and wet before grouting, or shall be treated with a bonding agent as required. Puddles of water in horizontal recessed keys shall be avoided by the use of drain recesses to outside edge of concrete. Concrete in walls and deep beams shall be placed in lifts not to exceed three layers at 12 inches each for the full length of the pour before proceeding higher. The placing of concrete shall not be delayed more than 20 minutes between layers or lifts.
6. Slab forms shall be thoroughly cleaned after placing wall concrete below. Concrete in beams or walls shall be placed to bottom of floor slab. After concrete in walls below floor slab has been in place for approximately 30 minutes, the concrete for the floor slab and upper portion of the beam shall be placed and vibrated.
7. When concrete is conveyed by chutes, the equipment shall be of proper size and design to insure a continuous flow in the chute. The chutes shall be

metal or metal lined, and the different portions shall have approximately the same slope. The slope shall not be less than one vertical to three horizontal or more than one vertical to two horizontal, and there shall be provision for a baffle at the discharge end of the chute to prevent segregation. If the vertical distance between the discharge end of the chute and the surface of the concrete is more than five feet, a spout shall be used. The lower end of the spout shall be kept as near the surface of the deposit as is practicable. All chutes and spouts shall be thoroughly cleaned before and after each run. All debris and water shall be discharged outside the forms.

### 3.03 CURING AND PROTECTION

#### A. Curing:

1. Immediately after surface defects have been repaired, apply a spray coat of curing compound to all exposed surfaces, including slabs, walls, beams and columns in accordance with the manufacturer's recommendations. Protect exposed steel keyways and other embedded items from the curing compound. Water cure, as specified in paragraph B hereunder, all concrete surfaces that are to be exposed to wastewater, surfaces that are to be coated with a coal tar epoxy system, and concrete floors requiring a bond for special finishes.
2. Do not apply compound during periods of rainfall. Should the film become damaged from any cause within the required curing period, immediately repair the damaged portions with additional compound. Upon removal of forms, immediately coat the newly exposed surfaces to provide a curing treatment equal to that provided for the surface.
3. Curing and Sealing Compound: Use clear compound conforming to Federal Specification TT-C-800A, 30% solids content minimum, having test data from an independent laboratory indicating a maximum moisture loss of 0.030 grams per sq. cm. when applied at a coverage rate of 300 sq. ft per gallon, and equal to Super Floor Coat or Super Pliocure by The Euclid Chemical Company or Masterseal 66 by Master Builders. Furnish manufacturer's certification as required.
4. Apply specified clear curing and sealing compound to all horizontal areas so noted on the Drawings or in the Specifications. Apply immediately after final finishing. Apply this compound to non-structural construction joints of slabs on grade to act as a bond breaker prior to placement of adjacent concrete.

#### B. Water Curing Method: Cure all concrete that is to be water cured by either the wet burlap method, by continuous fogging or by covering with waterproof sheet.

1. Wet Burlap Method: Cover concrete surface with a double thickness of burlap, cotton mats, or other approved material, kept thoroughly saturated with water. Keep the forms wet until removed and upon removal, start the

curing specified herein immediately. Cure the concrete for a period of 7 days for normal Portland cement or 4 days for high early strength cement. Do not submerge concrete poured in the dry until it has attained sufficient strength to adequately sustain the stress involved and do not subject it to flowing water across its surface until it has cured 4 days.

2. Continuous Fogging: Perform continuous fogging by fogging with a nozzle which so atomizes the flow of water that a mist, and not a spray, is formed. Fog the concrete surface regularly without allowing any part of the surface to become dry. Take all necessary precautions to prevent erosion of the concrete surface by the water.
3. Covering with Waterproof Sheets: Keep the entire area to be cured continuously wet by fogging, as specified in the fogging paragraph above, for at least 18 hours and then immediately cover with waterproof curing sheet conforming to ASTM C171, waterproof paper and polyethylene film, free of holes or tears. Keep sheet fully flat, without wrinkles or air bubbles, held down tautly at all edges. Do not use this method on slabs which will be exposed to view.

### 3.04 PLACING REINFORCEMENT

- A. All reinforcement shall be detailed, fabricated and erected in accordance with the A.C.I. "Manual of Standard Practice for Detailing Reinforced Concrete Structure", (A.C.I. 315), including bar supports and spacers. At splices all reinforcing bars shall be lapped a minimum of twenty-four (24) bar diameters but not less than twelve (12) inches.
- B. The reinforcing shall be fabricated to the shapes and dimensions shown and shall be placed where indicated on the drawing. Before placing, all reinforced steel shall be thoroughly cleaned of rust, mill scale or coatings, which would reduce or destroy the bond.

Reinforcing bars shall conform to the requirements of the latest editions of the A.C.I. Code and the CRSI Manuals.

- C. Wire mesh, unless otherwise shown on the drawings or specified, shall be 6" x 6" No. 10 woven or electrically welded wire fabric conforming to the requirements of ASTM Designation A185, latest revision.
- D. Space chairs and bolsters in accordance with ACI 315 and 318 using height to furnish cover over reinforcing required. Chairs with plastic feet or stainless steel shall be used in all beams and elevated slabs. Chairs for other concrete adjacent to or on the ground may be pieces of concrete block or concrete brick compressed into subgrade with the rebars bearing directly on the pointed edge of the masonry supports, or chairs set on precast concrete pads compressed into the subgrade.

- E. When placed in the forms, reinforcement shall be clean and free of all loose rust, scale, dust, dirt, paint, oil or other foreign material, and shall be accurately and securely positioned both laterally and vertically before placing concrete. Minimum clearances between the steel and face of concrete shall be maintained as shown.
- F. The rebars shall be fastened together at every intersection or at intervals not greater than 24 bar diameters by wire ties or by some alternate method acceptable to the Engineer. In areas where large bars are closer together, the wire ties may be spaced not more than 30 bar diameters apart, rather than as specified above.

### 3.05 FORMS

- A. Installation and erection shall be in accordance with ACI 347 and as specified hereinafter.
- B. Forms shall conform to shape, lines and dimensions of numbers indicated, and shall be sufficiently tight to prevent leakage of mortar. They shall not deflect under dead load weight of construction as a liquid or of construction load. Forms shall be properly braced or tied together so as to maintain position and shape within specified tolerances. Construct forms so that they can be removed steadily without hammering or prying against the concrete. Forms for exposed concrete shall be carefully made and accurately placed to obtain correct shape and line.
- C. Forms shall be of wood, metal, or other approved materials. Metal forms shall be of a type and manufacture acceptable to the Engineer. Plywood, fiberboard, or absorptive type form linings may be used where appropriate. Sectional forms shall produce a uniform surface and shall be assembled in a modular pattern. Pours will not be scheduled until all erection and bracing is complete. Walers, ties and braces shall be required for all forms.

Chamfer strips made from nominal dimensional 1" x 1" lumber cut on the diagonal shall be installed at the top of the forms on all exposed edges of walls, slabs, beams and other structures above grade.

- D. Drip edge shall be made from wood quarter round and installed where shown. Extruded plastic fillets shall be used where detailed. Circular structures shall be formed with special care, and attention to the appearance of the finished structure. Random location of fillers, non-modular sections, and excessive deviations from true circular segments shall be cause for rejection of the forms.
- E. The Contractor shall be fully responsible for the adequacy of formwork in its entirety. Forms shall support required loads and shall maintain their dimensional and surface correctness to produce members required by drawings.
- F. Slots, chases, recesses or other openings as shown on the drawings or as needed for the work of any other trades shall be boxed out.

- G. Box out for all temporary openings and build forms to seal them up when and as required.
- H. After sealing and immediately before the placing of reinforcing, faces of all forms in contact with the concrete shall receive a thorough coating of the liquid form releasing agent, applied in compliance with the Manufacturer's instructions.
- I. Reused forms shall be thoroughly cleaned out of dirt, debris, concrete and foreign matter. Forms shall not be reused if they have developed defects which would affect their tightness and strength or desired surface finish. Used forms shall not be used for architectural concrete.
- J. Forms shall be removed in a manner that will prevent injury to concrete. Supporting forms or shoring shall not be removed until the members have acquired sufficient strength to support their weight and any load thereon.
- K. Removal shall be in sequence as approved by the Engineer. Unless test cylinders warrant another procedure, the forms shall not be removed from members prior to the time listed in the schedule hereinafter unless otherwise directed.
- L. Bonding To Existing Surfaces: Clean existing concrete surfaces that are to have new concrete bonded thereto of all grease, oil, dust, dirt and loose particles and coat with an epoxy bonding agent just prior to placing of the new concrete. Apply the bonding agent as recommended by the manufacturer and allow the agent to become tacky before the new concrete is placed. Do not allow the bonding agent to overlap or be spilled on the surfaces to be exposed after the work is completed.

### 3.06 FORM REMOVAL

- A. Maintain formwork in place for the following structural conditions until the concrete has attained the minimum percentage of indicated design compressive strength or for the period of time specified in the following table.

Note: Time periods in the table include all days except those in which the temperature falls below 40 degrees F.

<u>Structural Member or Condition</u>	<u>Normal Strength Concrete</u>	<u>Normal High-Early Strength Concrete</u>	<u>Minimum Compressive Strength for Form Removal (% Design Strength)</u>
Cantilevers	12 days	7 days	90
Over 20 feet between supports	12 days	7 days	90
Stairway	10 days	5 days	80

Floor Slabs	5 days	3 days	70
Free standing walls, column and piers	5 days	3 days	70
Walls, piers columns, sides of beams, footings slabs on grade, and vertical surfaces	24-48 hours	12-24 hours	70
Front face form of curbs	6-24 hours	6 hours	70

### 3.07 CONCRETE FINISHINGS

#### A. Repair of Surface Defects:

1. General: Repair surface defects, including tie holes immediately after form removal. Dampen the area to be patched and an area at least 6 inches wide surrounding it to prevent absorption of water from the patching mortar. Notify the Engineer prior to commencing operations.
2. Removal of Defective Concrete: Remove all honeycombed and other defective concrete down to sound concrete. Cut edges perpendicular to the surface or slightly under cut. Sand blast surfaces to receive repair.
3. Bonding Grout: Thoroughly dampen surfaces to be patched and apply a coat of bonding grout consisting of one part cement to one part fine sand passing a No. 30 sieve and having the consistency of thick cream.
4. Placing Patching Mortar: After the bonding grout begins to lose its water sheen, apply a premixed patching mortar, thoroughly consolidating it into place and striking it off so as to leave the patch slightly higher than the surrounding surface. Leave mortar undisturbed for one hour to permit initial shrinkage and then finally finish.
5. Tie Holes: After being cleaned and thoroughly dampened, fill the tie holes solid with patching mortar.

#### B. Concrete Finishes:

1. Formed Surfaces: After removal of forms, chip off all irregular projections, grind flush with adjacent surfaces and finish concrete surfaces in accordance with the following schedule:

<u>Finish Designation</u>	<u>Area Applied</u>
F-1	Exterior walls below grade not exposed to water: Repair defective concrete, fill depressions deeper than 2 inch, and fill tie holes.
F-2	Exterior and interior walls exposed to water: Repair defective concrete, remove fins, fill depressions 3 inch or deeper, and fill tie holes.
F-3	Walls of structures of buildings exposed to view and underside of formed floors or slabs: In addition to Finish F-2, fill depressions and airholes in mortar. Dampen surfaces and then spread a slurry consisting of one part cement and one and one-half parts sand by damp loose volume on the surface with clean burlap pads or sponge rubber floats. Remove any surplus by scraping and then rubbing with clean burlap.
F-4	Tops of walls, beams and similar unformed surfaces occurring adjacent to formed surfaces: Strike smooth after concrete is placed and float to a texture reasonably consistent with that of formed surfaces.

2. Slab Surfaces:

- a. General: After concrete has been consolidated, finish all concrete slabs with a floated finish. After floating, trowel finish all concrete slabs, except for areas to receive roofing, insulation, tile or topping, and immediately light broom finish. Where a finish is not indicated, provide a troweled finish.

<u>Finish Designation</u>	<u>Area Applied</u>
S-1	Slabs and floors not water bearing: Smooth steel trowel finish.
S-2	Slabs and floors which are water bearing and slab surfaces on which mechanical equipment moves: Steel trowel finish free from trowel marks and all irregularities.
S-3	Slabs, floors and stair treads of structures or buildings exposed to view: Steel trowel finish without local depressions or high points and apply a light hair-broom finish. Do not use stiff bristle brooms or brushes. Leave hair-broom lines parallel to the direction of slab drainage.

- S-4                    Slabs and floors at slopes greater than 10%: Steel trowel finish without local depressions or high points. Apply a stiff bristle broom finish. Leave broom lines parallel to the direction of slope drainage.
- S-5                    Exposed edges of slabs, floors and tops of walls: Finish with a 3 inch radius edge if a chamfer is not indicated.
- B. Floated Finish: After concrete has been placed, consolidated, struck off and leveled, do not work the surface further until water sheen has disappeared and the surface has hardened sufficiently to permit floating. During the first floating, check the planeness of the slab with a 10 foot straightedge applied at no less than two angles. Cut down all high spots and fill all low spots to produce a surface having the required tolerance. Then refloat the slab to a uniform sandy texture.
- C. Light Broomed Finish: After floating, power trowel slabs to receive a light broomed finish to produce a smooth surface, relatively free of defects. Before the surface sets, pass a soft broom drag over the surface to produce a surface uniform in texture and appearance.
- D. Troweled Finish: After floating, power trowel slabs to receive a troweled finish to produce a smooth surface, relatively free of defects. Hand trowel after the surface has hardened sufficiently. When a ringing sound is produced as the trowel is moved over the surfaces, perform final troweling by hand to produce a surface which is thoroughly consolidated, free from trowel marks, uniform in texture and appearance and plane to a tolerance of 1/8 inch in 10 feet as determined by a 10 foot straightedge placed anywhere on the slab in any direction.
- E. Hardener Finish: Where indicated to receive a troweled hardener finish, water cure slabs without application of curing and sealing agent. When slab is at least 20 days old and thoroughly dry, apply the hardener in accordance with the manufacturer's recommendations. Where dry-shake hardener or slip resistant finish is required, apply the hardener or slip-resistant product prior to complete curing and finishing, in accordance with the requirements and recommendations of the product manufacturer.
- F. Saw Cut Joints: Cut joints that are to be saw cut not sooner than 2 hours after the concrete is poured and not later than 8 hours after the pour.

### 3.07 TESTS

- A. Compressive strength tests shall be made by breaking standard 6-inch diameter by 12-inch high test specimens prepared, cured and broken in accordance with the American Society for Testing Materials Standard Methods C-31 and C-39, latest revision. Four specimen test cylinders shall be taken from each pour of five (5) cubic yards or more. One additional test shall be taken from each thirty (30) cubic yards or fraction thereof in each pour in excess of thirty (30) cubic yards.

- B. Test specimens shall be taken from manhole bottom pours of less than five (5) cubic yards as directed by the Engineer. Test specimens shall be taken in the presence of the Engineer. One cylinder from each pour shall be broken at seven (7) days, the remainder at twenty-eight (28) days. Additional test cylinders may be ordered for determining the characteristics of a new design mix or changes in equipment or methods, and under adverse weather or curing conditions.
- C. Slump test shall be made in accordance with ASTM C143, latest revision, and shall be made with each load and at time of cylinders.
- D. The Contractor shall supply all cylinder molds, slump cones, tools and labor for preparing specimen, and shall provide clean, moist sand or burlap for curing. Cylinder shall not be shipped to the testing laboratory until the third day following preparation, and shall be protected from accidental damage at all times.
- E. The test cylinders shall be tested in a recognized commercial testing laboratory at the expense of the Contractor.

### 3.08 EXPANSION JOINTS, CONSTRUCTION JOINTS AND WATER STOPS

- A. Expansion Joints shall be placed as indicated on the drawings. Joint materials for surfaces exposed to water and sewage shall conform to ASTM D175, Preformed Joint Filler, non-extruding and resilient (bituminous type), thickness as shown on the drawings. Joint materials for isolation joints, slab-on-grade joints and wall joints not exposed to water and sewage shall conform to ASTM D994, preformed expansion joint filler for concrete (bituminous type), thickness as shown on the drawings.
- B. Construction Joints shall be located in accordance with a schedule of pours which shall be prepared and submitted by the Contractor. Vertical construction joints shall be held to the minimum number consistent with good standard practice.
- C. Water Stops. Material for water stops shall be 9-inch PVC multi-rib center-bulb type for expansion joints, and 1/4" x 4" and 1/8" x 4" structural steel sheets for construction joints. PVC joint material shall be as manufactured by The Burke Company, or approved equal.

END OF SECTION

## SECTION 03400

### PRECAST CONCRETE STRUCTURES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: The work under this Section includes the design, casting, delivery and erection of concrete structures as indicated on the Drawings.

##### 1.02 QUALITY ASSURANCE

- A. Standards: Unless otherwise indicated, all materials, workmanship and practices shall be in accordance with the current editions of the following standards:
1. Standard Building.
  2. ACI 318, Building Code Requirements for Reinforced Concrete.
  3. PCI MNL 116, Manual for Quality Control for Plants and Production of Precast Concrete Products.

##### 1.03 SUBMITTALS

- A. The following information shall be submitted for approval. Fabrication shall not begin until submission has been approved.
1. Quality Control: Satisfactory evidence shall be submitted that plant and production methods meet the requirements of PCI MNL 116.
  2. Design: Complete calculations including shear, moment, buoyancy, and camber calculations shall be submitted. All computation sheets shall bear the seal of a Professional Engineer registered in the State of Florida. Design water table shall be assumed to be at finished grade.
  3. Shop Drawings: Complete fabrication and erection drawings shall be submitted. All drawings shall bear the seal of a Professional Engineer registered in the State of Florida.
- B. Manufacturer's data sheets shall be submitted on the following:
1. Joint mastic and gaskets.
  2. Pipe connections.

3. Grout material.
4. Hatches and manhole covers

#### 1.04 DELIVERY, STORAGE AND HANDLING

- A. Transportation and erection shall be done by qualified personnel using proper equipment. Lifting and supporting shall be done only at points indicated on the shop drawings.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS AND FABRICATION

##### A. Precast Concrete Structures:

1. Design loads shall consist of dead load, live load, impact, soil loads and loads due to water table, as well as other loads which may be imposed upon the structure. Wetwells and manholes shall be designed in accordance with ASTM C-478. The minimum wall thickness for wetwells up to 7 feet I.D. shall be 8 inches. The minimum wall thickness for wetwells 8 feet 0 inches to 12 feet 0 inches I.D. shall be 10 inches. The minimum wall thickness for 4 foot I.D. manholes shall be 6 inches. The minimum wall thickness for valve vaults shall be 6 inches.
2. Forms used for precast concrete shall be of metal and sufficiently designed and braced to maintain their alignment under pressures of the concrete during placing. Base and first section of precast structures shall be an integral cast.
3. Aggregates: All aggregates, fine and coarse, other than lightweight aggregate shall conform to ASTM C33. Lightweight aggregates, fine and coarse, shall conform to ASTM C330. Aggregates shall be free of deleterious substances causing reactivity with oxidized hydrogen sulfide. Both types of aggregate shall be graded in a manner so as to produce a homogenous concrete mix. All materials are to be accurately weighed at a central batching facility for mixing.
4. Cement shall be Portland cement Type II.
5. Minimum compressive strength of concrete used for precast concrete structures shall be 4000 psi at 28 days.
6. Placing. All concrete shall be handled from the mixer or transport vehicle to the place of final deposit in a continuous manner, as rapidly as practicable, and without segregation or loss of ingredients, until the approved unit is completed. Maximum elapsed time from batching to placement shall be 2

hours. Concrete shall be placed in layers not over 2 feet deep. Each layer shall be compacted by mechanical internal or external vibrating equipment. Duration of the vibration cycle shall be limited to the time necessary to produce satisfactory consolidation without causing objectionable segregation.

7. Curing:
  - a. For purposes of early reuse of forms, precast concrete may be steam cured after an initial set has taken place. The steam temperature shall not exceed 160°F, and the temperature shall be raised from normal ambient temperatures at a rate not to exceed 40°F per hour.
  - b. The steam cured unit shall not be removed from the forms until sufficient strength is obtained for the unit to withstand any structural strain to which it may be subjected during the form stripping operation. After the stripping of forms, further curing by means of water spraying or a membrane curing compound may be used, and shall be of a clear or white type, conforming to ASTM C 309.
8. Reinforcing steel shall be sufficiently tied to withstand any displacement during the pouring operation. All bars shall be Grade 60.
9. Joints shall be tongue and groove pipe ends sealed with round or other flexible type natural rubber joint ring gaskets in conformance with ASTM C433 or by a flexible performed bitumastic sealing material equal to Ram-Nek as manufactured by R.K. Snyder and Co., Houston, Texas. If rubber joint ring gaskets are used, interior and exterior voids in the pipe joints shall be sealed with flexible sealing material specified above, installed in strict accordance with the manufacturer's printed instructions. If manhole sections are sealed with a flexible preformed bitumastic sealing material, adequate material shall be applied so that "squeeze out" occurs at the interior and exterior of the joint. Rubber joint ring gaskets and flexible preformed bitumastic sealing material shall be provided by the manhole manufacturer.
10. Eccentric precast concrete cone sections shall be manufactured of precast concrete with reinforcing and joints as specified above for straight riser.
11. Lifting holes through the structures are not permitted. Equally spaced lifting lugs, rings or non-penetrating lift inserts shall be provided.
12. Top slabs for shallow manholes, valve vaults, and pumping station wet wells may be precast or cast-in-place. Steel reinforcing shall be as required for the dead load of the slab plus an H-20 designation live load. Concrete for top slabs shall have a compressive strength of 4000 psi at 28 days. Thickness of concrete for top slabs shall be a minimum of 6 inches for shallow manholes and valve vaults and 8 inches for pumping station wet wells.

13. Manholes inverts shall be precast into the manhole base section by the manhole manufacturer unless prior approval is obtained from the Engineer to construct inverts in the field. The drop from inlet to outlet shall be a minimum of one inch unless approved by the Engineer. The channel height of the manhole invert shall match the crown of the exit sewer. Manhole benches shall be sloped a minimum of one inch per foot from the outside periphery of the manhole to the edge of the invert channel.
- B. Sealing Compound and Grout: Plastic sealing compound shall comply with Federal Specification SS-SS-00210. Mortar shall comply with ASTM C387, Type S, or use grout complying with Section 03600.
- C. Pipe Connections:
1. Pipe connections for wet wells and manholes shall be resilient, waterproof connections designed in accordance with ASTM C923 "Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes". Resilient pipe connectors shall either be cast into the manhole wall or installed following casting in a cored section of the manhole wall. Resilient connectors shall either be a gasket type connector equal to the A-Lok pipe to manhole seal as manufactured by Atlantic Concrete Products, Inc., or a flexible neoprene boot with stainless steel clamps equal to KOR-N-Seal System as manufactured by the Dukor Corporation. When the pipe is installed in the resilient manhole connector, the pipe shall be capable of 20° minimum deflection in any direction.
  2. Pipe connections for wall penetrations for valve vaults and for manholes and wetwells where resilient connectors cannot be used shall be provided with wall sleeves and link seals or as specified in Section 15050.
- D. Frames and Covers: Cast iron manhole frames and covers shall be provided for manholes and aluminum access hatches shall be provided for wetwells and valve vaults as specified below:
1. Standard Manhole Frames and Covers: Shall be gray iron castings conforming to ASTM A48, Class 30B for Gray Iron Castings; and shall be smooth, true to pattern, free from blow holes, sand holes, projections and other harmful defects. The seating surfaces of both the frame and cover shall be machined so that the cover will not rock after it has been seated. The cover shall be provided with a precisely machined dovetail groove with a neoprene O-ring gasket to provide a self sealing cover. The gasket shall be glued in place at the foundry. The manhole cover shall be solid with two non-penetrating pick holes. Manholes frames and covers shall be coated on all non-machined surfaces with three coats of coal tar epoxy as specified for the Class 7 Coating System in Section 09900. Manhole frames and covers

shall be U.S. Foundry and Manufacturing Corp. No. 38B, Ref. Cat. No. 225, Neenah Foundry Company No. R-1642 with a Type "B" cover or an equal approved by the Engineer.

a. Anchor Bolts: Anchor bolts for bolting manhole frame to precast manholes shall be 3/4 inch diameter galvanized all thread steel rods with a 5 inch hook for embedment in the precast manhole to p. The bolts shall be of sufficient length to provide a minimum 2 inch thread projection through the flange of the manhole frame. Two anchor bolts shall be cast into the precast manhole top section or slab, positioned at 180 degrees, at the time of manufacturer. Manhole frames shall be drilled to match the bolt settings prior to coating.

2. Aluminum Access Hatches: Aluminum hatches shall be provided for wetwells and valve vaults sized as indicated on the Drawings. Access hatches shall be a specified in Section 05540.

E. Coatings:

1. Interior and exterior surfaces of precast structures shall be coated with a primer coat and three finish coats of coal tar epoxy as specified in Section 09100.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

A. Earthwork: The Contractor shall prepare an excavation large enough to accommodate the structure and permit sealing of openings, waterproofing, and backfilling operations. Earthwork shall conform to the applicable sections of Division 2.

B. Installation of Precast Concrete Structures: Precast concrete structures shall be constructed in a workmanlike manner at the locations and dimensions indicated on the Drawings. Precast structures shall be set on foundation of crushed stone, 12 inches thick. Crushed stone material shall be a well graded crushed stone or crushed gravel meeting the requirements of ASTM C33, Gradation No. 67 (3/4 inch to No. 4 sieve). The precast structures shall be constructed such that the structure will not transmit dead or live loads to the piping. Care shall be taken to prevent earth and other material from entering precast structures.

C. Sealing and Grouting: Fill all interior and exterior joints between precast sections with a joint sealant, as recommended by the structure manufacturer.

D. Installing Precast Sections:

1. Set each precast concrete unit plumb on a bed of sealant to make a watertight joint at least 2 inch thick with the concrete base or with a preceding unit. Point the inside joint and wipe off the excess sealant.
2. Assemble units so that the cover conforms to the elevations shown on the Drawings.
3. Pipe connections at precast structures shall be provided at the locations shown on the Drawings. Connections shall be resilient and waterproof.
4. All voids in interior and exterior manhole section joints and lift holes for manhole sections shall be filled with a non-shrinking, non-metallic grout. Grout shall be applied and cured in strict accordance with the manufacturer's recommendations. The grout shall be finished smooth and flush with the wall surface of the manhole.

E. Manhole Flow Channels and Bench Walls:

1. Unless prior approval is obtained from the Engineer, manhole flow channels (inverts) and bench walls shall be precast into the manhole base section as specified above.
2. Upon prior approval from the Engineer, manhole invert channels may be constructed in the field. Invert channel bottoms shall be smooth and semicircular in shape conforming to inside of adjacent sewer sections. Changes in direction of flow shall be made with a smooth curve of as large radius as the size of manhole will permit. Changes in size and grade of channels shall be made gradually and evenly to give a smooth uninterrupted flow pattern through the manhole. Channel height shall match the crown of the connection sewer pipe exiting the manhole. Manhole bench walls shall be smooth and shall slope one inch per foot from the edge of the invert channel to the precast manhole wall. Invert channels may be constructed by forming in concrete or by building up brick and mortar to form the manhole bench walls on each side of the channel, and plastering over bricks with cement mortar with a minimum thickness of 2 inch. Manhole invert construction shall only be performed by experienced and qualified workmen.
3. Bricks used to construct manhole invert channels and bench walls shall be standard size (22 in. H X 4 in. W X 8 in. L) brick in conformance with ASTM C32 "Sewer and Manhole Brick (Made From Clay and Shale)", Grade MS. Mortar used for masonry work shall be prepared by thoroughly mixing: One (1) volume of Type II Portland Cement with three (3) volumes of sand and sufficient clean water to produce a rich mass of approved consistency. Mixing mortar on the ground or any paved surface shall not be

permitted. Sand to be used in making mortar shall be clean, well-graded, and shall pass a standard No. 4 sieve.

F. Setting Frames and Covers:

1. Unless otherwise indicated on the Drawings, in unpaved areas the tops of manholes shall be set 0.2 feet above finished grade and the tops of wetwells and valve vaults shall be set 0.5 feet above finished grade.
2. The top of all precast manholes may be brought to proper grade for receiving manhole frame by using not more than three courses of brick or precast concrete grade rings. Bricks and mortar used for manhole top grade adjustments shall be as specified above in Paragraph 3.01.E.3. Precast concrete grade rings shall be precast with steel reinforcement in conformance with ASTM C478 and concrete with a compressive strength of 4000 psi in 28 days. Precast concrete grade rings shall be manufactured in half annular shapes for ease of handling. The grade ring dimensions shall be 2 inches thick with an annular width of 8 inches and an inside diameter of 24 inches.
3. Masonry construction shall be performed by experienced and qualified workmen only. All work shall be laid plumb, straight, level, square and true. Brick shall be laid in full beds of mortar and shoved into place. All joints shall be full and not more than 2 inch in thickness. The Contractor shall set in place and bond in the masonry all necessary anchor bolts and miscellaneous items specified elsewhere. The masonry walls shall be plastered on the inside and outside with a one-half inch coat of Portland Cement mortar.
4. Following curing of any masonry construction required for manhole top adjustment, set manhole frame in a bed of 3 to 2 inch thick flexible bitumastic sealing material (Ram-Nek) and anchor in place with two 3/4 inch diameter anchor bolts, which shall be securely embedded in the top of the manhole. Seal the flange of the manhole ring to the top of the manhole with cement mortar.

G. Interior Lining: The interior coating system shall be applied following installation of the precast structures and any piping or equipment which will penetrate or attach to the walls. Surface preparation and application of the coating system shall be in strict accordance with the manufacturer's recommendations. Refer to Section 09900 for additional specifications.

H. Backfill: After the structure and all appurtenances are in place and approved, backfill shall be placed to the original ground line or to the limits designated on the Drawings. Backfill material shall consist of sand or loose earth, free from stones, clods, or other deleterious material. It shall be placed in horizontal layers not

exceeding 12 inches in depth, and shall be moistened and thoroughly compacted to a minimum relative density conforming to the requirements of Division 2.

END OF SECTION

## SECTION 03600

### GROUT

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

- A. Provide all labor, materials, tools and equipment and perform all grouting as specified hereinafter and indicated on the Drawings.

##### 1.02 RELATED WORK

- A. Section 03300: Cast-In-Place and Poured Concrete

##### 1.03 SUBMITTALS

- A. Submit manufacturer's literature for review on the following items:
  - 1. Nonshrink grout data including grout properties, mixing, surface preparation and installation instructions.

##### 1.04 DELIVERY AND STORAGE

- A. Deliver and store grouting materials in unbroken containers with seals and labels intact as packaged by the manufacturer.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Nonshrink, Nonmetallic Grout: The Burke Company's Non-Ferrous, Non-Shrink Grout, Sauereisen F-100 Level Fill, Master Builders Masterflow 713, Euclid NS Grout, or equal pre-mixed type.
- B. Nonshrink Metallic Grout: The Burke Company's Metallic Spec Grout, Master Builders Embecco 636 Grout pre-mixed type, or equal.
- C. Epoxy Grout: Sikadur 42 Grout-Pak, or equal, for grouting sleeves for anchor bolts, etc.

## PART 3 - EXECUTION

### 3.01 PREPARATION

- A. Clean all bonding surfaces of dust and oil.

### 3.02 INSTALLATION

- A. Nonshrink Grout:

1. Use nonshrink, nonmetallic grout for grouting precast concrete wall panel connections, column base plates, anchor bolts, reinforcing bars, pipe sleeves, machinery supports and pump base plates. Use epoxy grout for anchor bolts, etc., where indicated on the Drawings.
2. Mix and place nonshrink grout as recommended by the manufacturer.
3. Mix grout as close to the work area as possible and transport quickly to its final position in a manner which will not permit segregation of materials.
4. Cure nonshrink grout with water saturated burlap for at least three days or with an application of Super Rez Seal cure and seal compound applied immediately after grout placement.
5. Do not operate machinery set on grout pads until the grout has cured for at least 24 hours.

END OF SECTION

## SECTION 03700

### MODIFICATIONS AND REPAIR TO EXISTING CONCRETE

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

- A. Furnish all labor, materials, equipment and incidentals required to cut, repair, demolish, excavate or otherwise modify parts of existing structures or appurtenances as shown on the Drawings and as specified herein, including connecting new concrete to existing concrete, as necessary to complete the work under this Contract.

##### 1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. Section 03300: Cast-In-Place and Poured Concrete

##### 1.03 QUALITY ASSURANCE

- A. Do not cut, remove, or otherwise alter existing structures or concrete until authorization is given by the Engineer.
- B. When removing materials or portions of existing structures, and when making openings in existing structures, take all precautions and use all necessary barriers and other protective devices so as not to damage the structures beyond the limits necessary for the new work, nor to damage the structures or contents by falling or flying debris. Unless otherwise permitted, line drilling will be required in cutting existing concrete.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Epoxy Bonding Compound: Two component, moisture insensitive, heavy viscosity, high strength, rigid epoxy system that will bond under dry, damp or wet conditions, and is equal to BurkEpoxy MV or BurkEpoxy Mortar as manufactured by The Burke Company, Sikadur Hi-Mod as manufactured by Sika Chemical Corp., or Eurco 615 Epoxy as manufactured by Euclid Chemical Company.

#### PART 3 - EXECUTION

##### 3.01 INSTALLATION

- A. Take field measurements in the required structures to determine the amount of concrete to be removed and/or repaired and the amount of patching to be done.

### 3.02 CONSTRUCTION METHODS

- A. Where new concrete is to be made integral with existing concrete, use the methods shown in the Drawings.
- B. Mix and apply all bonding and patching materials in accordance with the manufacturer's instructions and recommendations.

### 3.03 MODIFYING OR REPAIRING EXISTING CONCRETE

- A. Remove concrete to the depths shown or required. Roughen contact surface by chipping, sandblasting, scarifying or other approved methods. Thoroughly clean the surface, removing loose particles and dust.
- B. Cut off projecting reinforcement when required to provide at least 2 inch cover. Where shown, bend reinforcement across cut face and cover with new concrete.
- C. Thoroughly wash the roughened concrete surfaces and keep the surfaces saturated for at least 6 hours before placing new concrete. Remove all free water prior to placing the concrete. An epoxy bonding compound, as specified, may be used in lieu of saturating surface for 6 hours.
- D. Place cement mortar, where required, to a thickness slightly in excess of the finished surface, and steel-trowel-finish, flush with the adjacent surface.
- E. When the finish surface of new concrete in exposed surfaces is not specified to be coated, match the color of the existing adjoining concrete as closely as possible.
- F. Mix cement mortar in the proportions of 1 part Portland cement to two parts of sand by volume. Do not use accelerating admixtures in surface treatment. Where shown on the Drawings, use a non-shrink grout for patching and filling.

### 3.04 CONNECTIONS, NEW CONCRETE TO EXISTING CONCRETE

- A. Make connections to existing concrete as shown on the Drawings.
- B. Where it is necessary to expose existing reinforcement, clean the reinforcing rods or wire mesh by wire brushing and hook new reinforcement into existing reinforcement and lap or weld as directed. Provide at least 3/4 inch clearance around each bar.
- C. Mix and apply the epoxy in strict accordance with the printed instructions of the approved manufacturer.
- D. Preparation of Concrete Surfaces:

1. Surfaces must be clean and sound. Surfaces may be dry, damp, or wet, but free of standing water. Remove dust, laitance, grease, curing compounds, impregnations, waxes, foreign particles, and disintegrated materials by mechanical abrasion methods such as sandblasting. Sandblast steel to appropriate finish.
  2. If the concrete surfaces are sound and it is only necessary to remove laitance, grease or dust, the Contractor may, with the prior written approval of the Engineer, forego sandblasting and wash the concrete with a degreasing and etching chemical applied in accordance with the manufacturer's written instructions and as stipulated in these Specifications hereinafter.
  3. Degreasing and Etching Chemical: ProSoCo, Inc., Sure-Klean Degreaser & Etch, or equal, with water white color, flash point above 150F, and consisting of a blend of organic and inorganic acids with a special solvent system incorporating wetting agents for emulsification.
  4. Application of Degrease and Etching Compound: Prewet concrete surfaces with clean water. Brush concentrated cleaner onto concrete surface. Let stand 3 to 4 minutes and reapply, brushing stained areas vigorously. Rinse off with fresh water applied at a minimum volume of five gallons per minute.
- E. Application of Bonding Compound:
1. Cover the area to be overlaid with one coat of the epoxy compound applied with long-nap paint rollers, brushes, brooms or by spray as per manufacturer's instructions.
  2. Place the concrete while the epoxy compound is still tacky. If the bonding compound should harden before the concrete is placed, apply a fresh coat over the hardened coat and proceed.
- F. Application of Grouting: To prepare a grout for anchor bolts or to level base plates, mix the compound as recommended by the manufacturer.
- G. Weather Limitation: Place the epoxy compound only when both the concrete surface temperature and the ambient temperature are as recommended by the manufacturer.

### 3.05 OPENINGS IN CONCRETE

- A. Where openings are required for pipes, thimbles for gates, gate stems or other installations in existing concrete structures, cut the existing concrete within the limits required, as shown on Drawings or specified, expose the existing reinforcing steel and perform the work in such a manner as to prevent damage to the existing adjacent structures or equipment.

- B. Unless otherwise permitted, line drilling will be required.
- C. Where concrete is cut to provide openings for gate stems, accurately install pipe sleeves and grout in place in an approved manner.
  - 1. Clean the exposed reinforcement by wire brushing, then cut and bend to permit the installation and finally bend around the new pipe or thimble. Provide additional reinforcement as shown on the drawings for typical reinforcing details of openings in walls and slabs, otherwise shown, specified or required.
  - 2. After installation of pipelines and thimbles, etc., prepare the existing concrete as specified above and fill the void between the outside of the pipe or thimble and the existing concrete with non-shrink non-metallic grout.

END OF SECTION

## SECTION 15000

### MECHANICAL - GENERAL REQUIREMENTS

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

- A. The Contractor shall furnish and install complete and ready for use, all the equipment, machinery, apparatus, motors, drives, tools, meters, charts and other accessories, and shall perform such operations and tests, all as specified herein, and as indicated on the drawings.
- B. The materials of construction of all equipment furnished and permanently installed on the project shall be of best quality. The workmanship of construction, finish and fit shall be equal to the highest industry standards. All equipment and/or components thereof shall be new, and shall not have been in service at any other installation.
- C. The desired standard of quality for each item of equipment is established by reference on the drawings and in the specifications to specific manufacturer's products. Materials of construction and/or fabrication shall equal or exceed the standard of the referenced product. The Contractor's attention is called to Article 1.06.

##### 1.02 EQUIPMENT WARRANTY

- A. All mechanical and electrical equipment, together with devices of whatever nature and all components, which are furnished and/or installed by the Contractor shall be guaranteed against manufacturing and/or design inadequacies, materials and workmanship not in conformity with the paragraph above, improper assembly, hidden damage, failure of devices and/or components, excessive leakage or other circumstances which would cause the equipment to fail under normal design and/or specific operating conditions for a period of two years or such longer period as may be shown and/or specified from and after the date of acceptance of the equipment by the Owner. Each piece of equipment, device or components thereof which shall fail within the above specified term of the guarantee shall be replaced and installed with reasonable promptness by the Contractor without cost to the Owner.
- B. Rotating machinery shall be designed and fabricated to provide satisfactory operation without excessive wear and without excessive maintenance during its operating life. Rotating parts shall be statically and dynamically balanced and shall operate without excessive vibration.
- C. On all equipment ample means of lubrication shall be provided for all bearings and other metal parts in sliding contact.

- D. The minimum design criteria for lubrication of moving parts of the equipment shall include one week of continuous operation during which no lubricants shall be added to the system. The system shall also be designed to receive lubricants whether in operation or shut down, and shall not leak or waste lubricants under either condition. The manufacturer's recommendations of grade and quality and a supply of lubricants so recommended in quantities sufficient to conduct startup and testing operations shall be furnished with the equipment. Alemite industrial-type fittings, or equal, shall be used for grease lubrication except as noted.

#### 1.03 SPECIAL TOOLS

- A. Special tools, wrenches and thickness or depth gauges required for removing parts and for making adjustment shall be included with each item of equipment having wearing parts and requiring repairs or adjustments. All accessories such as indicating gauges, indicators and lubrication devices necessary for the proper maintenance and operation of the equipment shall be furnished and stored safely at the site of the work and delivered to the Owner after the equipment is accepted.

#### 1.04 SAFETY REQUIREMENTS

- A. Screens, guards or cages shall be provided for all exposed, rotating or moving parts in accordance with accepted practices of applicable governmental regulatory agencies.

#### 1.05 NAMEPLATES

- A. Each major component of equipment shall have the manufacturer's name, catalog and/or model number, and serial number on a corrosion-resistant plate securely attached to the item of equipment.

#### 1.06 INITIAL OPERATION AND TESTS

- A. Upon completion of all the mechanical work, in a manner satisfactory to the Engineer, the Contractor shall designate a day for initial testing of the equipment. Prior to such completion date, the Contractor shall give the Owner seven (7) days notice thereof in writing, and the Owner will then appoint the personnel which will operate the plant equipment, and on the test day designated, the Contractor shall make the initial test to determine the performance using the personnel designated by the Owner and such personnel of his own as is specified or as he deems necessary to complete the tests.
- B. The initial tests shall be limited to a period of twenty-four (24) hour's duration and during this time the mechanical performance of all equipment shall be tested and demonstrated by the Contractor. If the demonstration and tests indicate satisfactory mechanical performance in the operation of the equipment, the Contractor will then

be given a three (3) day notice by the Engineer to make a final guarantee test of the plant equipment under normal operation. During the initial tests and the three (3) day period between the initial tests and the final tests, the Contractor's personnel shall supervise the operation of the plant equipment, assist and train the Owner's operating personnel in their duties. Experts on equipment installation and operation, as specified or necessary as well as complete, written, detailed erection, operation and maintenance instructions, shall be furnished by the Contractor to insure proper training and instruction of the Owner's personnel. A minimum of six complete sets of operation and maintenance instructions shall be provided.

- C. The final guarantee tests shall be for a period of twenty-four (24) hours duration, except as otherwise provided, and shall be made at the conclusion of the three (3) day period of operation and training. These tests shall be made under normal operating conditions under the supervision of the Contractor's personnel. This test is for the purpose of demonstrating that all performance and efficiency guarantees of the equipment and other requirements in compliance with these specifications have been met, that the operation of all equipment is coordinated and that all controls operate satisfactorily in coordination with the equipment installed.
- D. In the event the initial or final guarantee testing and demonstration of equipment and controls does not meet the guarantee conditions or is not demonstrated to the satisfaction of the Engineer, the Contractor shall, at his own expense, make such changes and adjustments in the equipment which he deems necessary and shall conduct further tests until full satisfaction is indicated by the Engineer and written certification is received thereof.

#### 1.07 SHOP PAINT

- A. All ferrous metal on plant equipment, unless otherwise specified or directed by the Engineer, shall receive shop paint compatible with field costs provided by the Contractor, in accordance with the requirements of the section of the specifications entitled, "Painting and Special Coatings in Part A of Technical Specifications.

### PART 2 - MATERIALS AND EQUIPMENT

#### 2.01 EQUIPMENT

- A. Equipment Requiring Variations from Structures Shown on the Plans
- B. It is the intent that the Contractor shall furnish equipment which may be installed and shall operate properly in the structure as shown. Should the Contractor select alternate equipment resulting in an alteration to, addition to, enlargement of, or any other changes from the lines, dimensions and grades shown on the drawings, the Contractor shall make such changes or alterations as are required and no additional payment will be made by the Owner for changes in structures occasioned by the

selection of alternate equipment. All such variations shall be subject to review and acceptance by the Engineer.

- C. Equipment requiring supplemental services in addition to those shown or specified in order to fulfill the operating objectives and including additional mechanisms, operating steps and/or controls as compared with specified equipment will not be acceptable.

END OF SECTION

## SECTION 15050A

### PIPING MATERIALS, DESIGNATION AND TESTING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: This section specifies the pneumatic, hydrostatic, and leakage testing of piping and acceptable piping materials for each application. The piping designations (mark) are also indicated.
- B. Testing Records:
  - 1. Provide a record of each piping installation during the testing. These records shall include:
    - a. Date of test.
    - b. Identification of pipeline tested or retested including designation.
    - c. Identification of pipeline material.
    - d. Identification of pipe specifications.
    - e. Test fluid.
    - f. Test pressure.
    - g. Remarks: Leaks identified (type and location), types of repairs, or corrections made.
    - h. Certification by Contractor that the leakage rate measured conformed to the specifications.
    - i. Signature of Engineer's representative witnessing pipe test.
  - 2. Submit the test records to the Engineer's representative upon completion of the testing.

## PART 2 - PRODUCTS

### 2.01 GENERAL

- A. Testing fluid shall be water unless a pneumatic test for air or chemical systems is indicated on the Piping Pressure Test Schedule.

### 2.02 MATERIALS AND EQUIPMENT

- A. Provide pressure gauges, pipes, bulkheads, pumps, and meters to perform the hydrostatic and pneumatic testing.

## PART 3 - EXECUTION

### 3.01 TESTING PREPARATION

- A. Pipes shall be in place and anchored before commencing pressure testing.
- B. Conduct hydrostatic and pneumatic tests on exposed and above ground piping after the piping has been installed and attached to the pipe supports, hangers, anchors, expansion joints, valves, and meters.
- C. Before conducting hydrostatic tests, flush pipes with water to remove dirt and debris. For pneumatic tests, blow air through the pipes.
- D. Test new pipelines which are to be connected to existing pipelines by isolating the new line from the existing line by means of pipe caps, special flanges, or blind flanges. After the new line has been successfully tested, remove caps or flanges and connect to the existing piping.
- E. Conduct hydrostatic tests on buried pipe after the trench has been completely backfilled. The pipe may be partially backfilled and the joints left exposed for inspection for an initial leakage test. Perform the final test, however, after completely backfilling and compacting the trench.
- F. Testing of piping under structures shall be completed prior to beginning construction of the structure. In the case of concrete encased piping, the pressure test shall be conducted after the concrete encasement has been placed and cured, but prior to beginning construction of any structure above the piping.

### 3.02 INSPECTION AND TESTING

A. Hydrostatic Testing of Aboveground or Exposed Piping: Open vents at high points of the piping system to purge air while the pipe is being filled. Subject to piping system to the test pressure indicated. Maintain the test pressure for a minimum of two hours. Examine joints, fittings, valves, and connections for leaks. The piping system shall show no leakage or weeping. Correct leaks and retest until no leakage is obtained. Test pressure shall be 150 psi for water unless otherwise specified.

B. Hydrostatic Testing of Buried Piping:

1. Where any section of the piping contains concrete thrust blocks or encasement, do not make the pressure test until at least 10 days after the concrete has been poured. When testing mortar lined or PCCP piping, fill the pipe to be tested with water and allow it to soak for at least 48 hours to absorb water before conducting the pressure test.
2. Apply and maintain the test pressure by means of a hydraulic force pump. Maintain the test pressure for a minimum duration of two hours. After the test pressure is reached, use a meter to measure the additional water added to maintain the pressure. This amount of water is the loss due to leakage in the piping system. The allowable leakage rate is defined by the formula.

$$L = \frac{ND\sqrt{P}}{7,400}$$

in which:

L = allowable leakage (gallons/hours) during the test period.

N = number of rubber gasketed joints in the pipe tested (zero for flanged or welded pipe)

D = diameter of the pipe (inches)

P = specified test pressure (psig)

3. Repair and retest any pipes showing leakage rates greater than that allowed in the above formula.

C. Pneumatic Testing:

1. Test Pressure: As shown in the Specifications, or 150 psi.

2. Perform pneumatic testing using dry air. Perform tests only after the piping has been completely installed including supports, hangers, and anchors. Protect test personnel and Owner's operating personnel. Secure piping to be tested to prevent the pipe from moving and to prevent damage to adjacent piping and equipment. Remove or isolate from the pipe any appurtenant instruments or devices that could be damaged by the test, prior to applying the test.
3. Apply an initial pneumatic leakage test of 25 psig to the piping system prior to final leak testing. Examine for leakage, detected by soap bubbles, at joints and connections. After correcting visible leaks, gradually increase the pressure in the system to not more than one-half of the test pressure. Then increase the pressure in steps of approximately one-tenth of the test pressure until the required test pressure has been reached. Continuously maintain the pneumatic test pressure for a minimum time of four hours and for such additional time as may be necessary to conduct a soap bubble examination for leakage. The piping system shall show no leakage. Correct any visible leakage and retest.

D. Testing of Non-Pressure Piping:

1. Testing of non-pressure gravity flow pipe shall be accomplished by infiltration or exfiltration testing. Non-pressure piping which has a crown elevation below the groundwater table shall be tested by measuring the infiltration. Non-pressure piping which has a crown elevation above the groundwater table shall be tested by measuring the exfiltration.
  - a. Infiltration Testing: The Contractor shall identify and prepare each section of piping to be tested. The designated piping shall be monitored for a minimum of four (4) hours. All buried leaks shall be located and repaired immediately and retested. All visible leaks must be repaired regardless of the measured leakage. No visible leakage will be allowed.
  - b. Exfiltration Testing: The Contractor shall close all openings in the section of pipe to be tested. The hydrostatic water level of the pipe system shall be raised to a height equal to the maximum design submergence, but in no case less than 3 feet above the highest point in the line. The closed system shall be maintained for a minimum duration of 4 hours. Any loss of volume shall be noted. The line will not be accepted until this measured quantity is less than 25 gallons per inch of diameter of pipe per mile of pipe per 24 hours. All buried leaks shall be located and repaired as soon as possible. All visible leaks must be repaired regardless of the measured leakage.

2. If impractical to conduct the infiltration or exfiltration tests as specified, the line can be pressurized for low pressure air testing. The air test shall be made by attaching an air compressor or testing apparatus to a suitable opening. After closing all other inlets and outlets to the system, force air into the system until there is a uniform gauge pressure of 5 psi. This pressure shall be held constant without introduction of additional air for a period of at least 30 minutes.
3. The allowable limits of infiltration or exfiltration of manholes shall not exceed a rate of 0.165 gallons per manhole per hour.
4. Testing shall proceed for a continuous period of at least four hours, with exfiltration or infiltration amounts measured by approved methods. Upon application of internal hydrostatic pressure for exfiltration testing, care shall be taken to preclude unseating the joint gaskets for a specific type of pipe by exceeding the pressure capability thereof.
5. Should any test fail, necessary repairs shall be accomplished by the Contractor and the test repeated until within the established limits. The Contractor shall furnish the necessary labor, water and all other items required to conduct the required testing and shall perform the necessary system repairs required to comply with the specified test.

### 3.03 DISINFECTION

- A. Following pressure testing, the Contractor shall disinfect all sections of the water or reclaimed water distribution system, and receive approval thereof from the appropriate agencies, prior to placing in service. Advance notice shall be provided to the Engineer before disinfection procedures start. The disinfection shall be accomplished in accordance with the applicable provisions of AWWA Standard C651, "Disinfecting Water Mains", and all appropriate approval agencies. Testing shall be performed by approved, professional laboratory.
- B. The disinfecting agent shall be liquid chlorine or sodium hypochlorite solution conforming to Federal Specification O-S-602b Sodium Hypochlorite, Grade D. Dry hypochlorite, similar or equal to "HTH" may also be used as the disinfecting agent.
- C. The piping shall be disinfected by introducing the disinfecting agent into the water, which is being pumped into the system, in such manner that the entire system will be filled with water containing a minimum chlorine concentration of 50 ppm at any point. This water shall be allowed to remain in the system for a minimum contact period of eight hours before the system is flushed out.

- D. After the disinfecting agents have been permitted to remain for the specified contact periods, the structures, pipelines, pumps and valves shall be thoroughly flushed with water until the residual chlorine tests are less than .2 ppm in each instance. The determination of the amount of residual chlorine in the system shall be made at such points and in accord with standard tests by means of a standard orthotolodine test set.
- E. After any units or portions of the system have been disinfected and flushed as specified, samples of water shall be taken from several points as applicable in suitable sterilized containers and the samples forwarded to an independent, approved testing laboratory for bacterial examination. If repeated tests of such samples show the presence of coliform organisms, the disinfection shall be repeated or continued until tests indicate the absence of pollution. Two consecutive daily samples of two samples per day per sampling point shall be satisfactorily tested, sent to the Florida Department of Environmental Regulation for their approval, and approved before the system is placed in service.
- F. The Contractor shall furnish all equipment and materials and perform the work necessary for the disinfecting procedures, including additional disinfection as required and testing lab services.

#### 3.04 CONNECTION TO EXISTING SYSTEM

- A. All connections to existing mains shall be made after complete disinfection of the proposed system and shall be made under the direction of the owners of the existing system. Valves separating the mains being installed from existing mains shall be operated by or under the direction of said owner's representative. The cost of the work in making the connections shall be paid for by the Contractor.
- B. In the event the proposed main is to be connected to a main which has one or more active services between the point of connection and the first existing line valve, a temporary plug or cap shall be installed on the new main until the pressure tests and disinfecting are completed. Upon satisfactory completion, the cap or plug shall be removed from both mains and the connection made with pipe which has been swabbed out with a solution of chlorine and water. The connection shall be made as swiftly as possible and any water in the ditch shall be kept below the level of the pipe. The pipe line shall then be placed in service by the owner's personnel.
- C. In the event any existing users will be without water while a connection is being made, the Contractor shall give the Owner 48 hours notice. The Owner will notify residents when the water will be turned off and when service will be resumed. In some instances, these connections may have to be made at night. No user shall be without water service for more than two hours.

- D. Cut overs from existing water service lines at the meter box shall be accomplished by City personnel after the new water mains have been "cleared" for use and the Contractor has installed the required new water line corporation stops, service lines and curb stops as shown on the contract plans.

TABLE 15050

TREATMENT PLANT PIPING PRESSURE TEST SCHEDULE  
AND MATERIAL LISTING

SERVICE	MARK	TEST PRESSURE IN PSIG	MATERIAL
Air	A	See Note 1	DIP OR SS
Alum	ALW(SO4) <sup>3</sup>	See Note 2	SCH. 80 PVC
Backwash Air	BWA	See Note 1	DIP
Backwash Water	BWW	100	DIP
Chlorinated Effluent	CLE	100	DIP
Chlorine Gas Pressure	CGP	300, See Note 3	BLK. STEEL
Chlorine Gas Vacuum	CGV	See Note 4	SCH. 80 PVC
Chlorine Solution	CS	100	SCH. 80 PVC
Clarifier Effluent	CE	See Note 5	DIP
Compressed Air	CA	200	GS
Dechlorinated Effluent	DCLE	See Note 5	DIP
Dirty Backwash Water	DBWW	See Note 5	DIP
Drain	D	See Note 5	SEE NOTE 6
Filter Effluent	FE	See Note 5	DIP
Filter Influent	FI	See Note 5	DIP
Filtrate	F	100	DIP
Grit	GR	50	DIP
Internal Recirculation	IR	50	DIP
Methanol	M	See Note 2	SCH. 80 PVC

<b>SERVICE</b>	<b>MARK</b>	<b>TEST PRESSURE IN PSIG</b>	<b>MATERIAL</b>
Mixed Liquor	ML	See Note 5	DIP
Non-Potable Water	NPW	150	SEE NOTE 7
Odor Control Duct	OCD	See Note 1	SEE NOTE 8
Potable Water	PW	150	SEE NOTE 7
Plant Recycle	PR	50	DIP
Plant Recycle Drain	PRD	See Note 5	SEE NOTE 6
Polymer Liquid	PYL	See Note 2	SCH 80 PVC
Polymer Solution	PYS	See Note 2	SCH 80 PVC
Raw Sewage	RS	50	DIP
Return Activated Sludge	RAS	50	DIP
Reuse Water (Pressure)	RW	150	DIP, HDPE or PVC
Reuse Water (Gravity)	RW	50	DIP
Sanitary Sewer	S	See Note 5	SEE NOTE 6
Scum	SC	50	DIP
Seal Water	SW	See Note 9	SCH. 80 PVC
Sodium Hydroxide	NaOH	See Note 2	SCH. 80 PVC
Sodium Hypochlorite	NaOCl	See Note 2	SCH. 80 PVC
Sulfur Dioxide Gas Pressure	SDGP	300, See Note 3	BLK. STEEL
Sulfur Dioxide Gas Vacuum	SDGV	See Note 4	SCH. 80 PVC
Sulfur Dioxide Solution	SDS	100	SCH. 80 PVC
Sulfuric Acid	H2SO4	See Note 2	BLK. STEEL
Sump Pump Discharge	SPD	50	SCH. 80 PVC
Thickened Waste Activated Sludge	TWAS	100	DIP
Waste Activated Sludge	WAS	50	DIP

NOTES:

1. Discharge pipes shall be tested at 1.5 times the maximum output pressure of the blowers, but shall not be less than 50 psig. In addition, suction pipes, duct work or other vacuum conduits shall be vacuum tested at 1.5 times the maximum vacuum produced by blower operation.
2. Chemical feed piping shall be tested at 75 psig using compressed air.
3. Pneumatic test. Pressure test the system with nitrogen. Do not test through equipment.
4. Vacuum test. Perform pneumatic test to 100 psig using nitrogen. Do not perform pneumatic test through equipment. Afterward, perform vacuum test at 10 inch Hg VAC between vacuum regulator and chlorinator or sulphonorator, and at 25 inch Hg VAC between chlorinator or sulphonorator and injectors.
5. See Specification Section 15050, paragraph 3.02D for testing of non-pressure piping. Calculations for restraint of non-pressure piping shall use a valve of 15 psig.
6. Drains pipes/sanitary sewers shall be DR 18 PVC meeting AWWA C900 or C905 or Class 52 DIP. All drain pipes under structures shall be DIP and shall be concrete encased in accordance with the contract documents.
7. Piping for sizes less than 4 inches shall be Schedule 80 PVC or HDPE, (as indicated). All other sizes of pipe shall be DIP of Class 250 or (DR 18) PVC. All above ground piping outside of structure 3 inches and less shall be Schedule 80 PVC while piping above 3 inches in diameter shall be DIP.
8. Odor control duct work shall be vacuum tested at 1.5 times the maximum vacuum produced by blower operation, but shall not be tested at less than 10 inches water VAC.
9. Test pressure requirements for seal water piping shall be 1.5 times the maximum working pressure, but test pressure shall not be less than 100 psig.

END OF SECTION

## SECTION 15100

### PROCESS AND UTILITY PIPING, FITTINGS, VALVES AND ACCESSORIES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: The work included in this Section consists of furnishing all labor, equipment and materials and in performing all operations necessary for the construction or installation of all process and utility piping, valves, valve boxes and all castings and appurtenances within, complete and ready for operation as shown on the Drawings and specified herein.

##### 1.02 QUALITY ASSURANCE

A. Construction Requirements:

1. All underground lines shall be installed with at least 30 inches of cover or as detailed on the drawings.
2. For underground utilities changes in pipe alignment and use of fittings may be allowed, subject to approval of the Engineer as to layout. Deflection shall not exceed 80 percent of the maximum allowable deflection as stated in the pipe manufacturer's installation instructions.

B. Pipe Inspection:

1. The Contractor shall obtain from the pipe manufacturers a certificate of inspection to the effect that the pipe and fittings supplied for this Contract have been inspected at the plant and that they meet the requirements of these specifications. Certification shall be stamped with corporate seal.
2. All pipe and fitting shall be subject to visual inspection at time of delivery by rail or truck and also just before they are lowered into the trench to be laid. Joints or fittings that do not conform to these specifications will be rejected and must be removed immediately by the Contractor.
3. The entire product of any plant may be rejected when, in the opinion of the Engineer, the methods of manufacture fail to secure uniform results, or where the materials used are such as to produce inferior pipe or fittings.

1.03 SUBMITTALS

A. Shop Drawings:

1. In general six (6) copies of the following shop drawings shall be submitted to the Engineer for approval prior to construction:
  - a. Mill test certificates or certified test reports on pipe and fittings
  - b. Details of restrained and flexible joints
  - c. Valve vaults
  - d. Valve boxes
  - e. All gate, plug, ball, solenoid, check valves, and automatic air release valves
  - f. Couplings
  - g. Service saddles, curb, & corp stops.
  - h. Flexible expansion joints
  - i. Pressure gauges
  - j. Identification tape
  - k. Joint lubricant
  - l. Detailed piping layout drawings and pipe laying schedule
  - m. Temporary plug and anchorage system for hydrostatic pressure test
  - n. Tie rods
  - o. Reduces pressure backflow preventers.
2. A separate shop drawing submittal will be required for each major item listed above and for each different type of an item within a major item. For example, separate submittals will be required for gate, plug, ball, solenoid, check and automatic air release valves. All submittals shall be in accordance with the General Conditions and the Supplementary Conditions.

B. Acceptance of Material:

1. The Contractor shall furnish an Affidavit of Compliance certified by the pipe manufacturer that the pipe, fittings and specials furnished under this Contract comply with all applicable provisions of current AWWA and ASTM Standards and these Specifications. No pipe or fittings will be accepted for use in the work on this project until the Affidavit has been submitted and approved by the Engineer.
2. The Owner reserves the right to sample and test any pipe or fitting after delivery and to reject all pipe and fittings represented by any sample which fails to comply with the specified requirements.

C. Operation and Maintenance Manuals:

1. Submit copies of operation and maintenance manuals for all the items requiring routine maintenance.

1.04 DELIVERY, STORAGE AND HANDLING

- A. During shipping, delivering and installing pipe, fittings, valves, backflow preventers, and accessories, they shall be handled in such manner as to ensure a sound undamaged condition.
- B. Particular care shall be taken not to damage the pipe coating.
- C. Insides of valves and backflow preventers shall be kept free of dirt and debris.

1.05 JOB CONDITIONS

A. Water in Excavation:

1. Water shall not be allowed in the trenches while underground pipes are being laid and/or tested. The Contractor shall not open more than 100' of trench than the available pumping facilities are able to dewater to the satisfaction of the Engineer. The Contractor shall assume responsibility for disposing of all water so as not to interfere with the normal drainage of the territory in which he is working.
2. In no case shall the pipelines being installed be used as drains for such water, and the ends of the pipe shall be kept properly and adequately plugged during construction by the use of approved stoppers and not by improvised equipment. All necessary precautions shall be taken to prevent the entrance of mud, sand, or other obstructing matter into the pipelines. If on completion of the work any such materials have entered the pipelines, it must be cleaned

as directed by the Engineer so that the entire system will be left clean and unobstructed.

## PART 2 - PRODUCTS

### 2.01 DUCTILE IRON PIPE AND FITTINGS

- A. Ductile Iron Pipe: Ductile iron pipe shall conform to the requirements of ANSI/AWWA C150/A21.50, latest revision. The minimum thickness class for all pipe greater than 12" diameter shall be pressure Class 250, and all pipe 12" or less in diameter shall be pressure Class 350.

Pipe shall have a minimum rated water working pressure of 250 psi and shall be furnished in laying lengths of 20 feet or less, unless specifically shown otherwise on the Drawings. The pipe shall be lined and coated as specified below.

1. Interior Lining for Raw Activated Sludge (RAS), Sludge Lines and Force Mains: Ductile iron fittings and specials shall be coated with 40 mils nominal dry film thickness of Protecto 401 or approved equal in accordance with the manufacturers recommended actions.
  2. Interior Lining for Potable and Reclaimed Water Piping: Ductile iron pipe, fittings and specials shall be cement lined in accordance with ANSI/AWWA C104, current revision, "Cement-Mortar Lining for Ductile Iron and Gray Iron Pipe and Fittings for Water". The cement lining shall have a standard thickness and after curing the lining shall have a seal coat of bituminous material in accordance with ANSI/AWWA C104, current revision.
  3. Exterior Coatings: The exterior of ductile iron pipe fittings and specials to be installed underground shall be coated at the factory with standard bitumastic coating.
  4. Polyethylene Encasement: Where indicated the Contractor shall utilize polyethylene encasement in accordance with ANSI/AWWA C105-T1. The polyethylene shall conform with ASTM D-1248-68 and be color coded to the service application.
  5. Ductile iron pipe, fittings and specials to be installed aboveground shall be furnished with a shop applied primer on the exterior. The shop primer shall be as specified in accordance with manufacturers recommendations.
- B. Fittings: Fittings for ductile iron pipe shall be either mechanical joint, restrained joint or flanged joint as indicated on the Drawings and shall have a minimum working pressure of 250 psi. Fittings shall be ductile iron and shall conform to ANSI/AWWA C110, ANSI/AWWA C111 and ANSI/AWWA C153, latest revisions for flanged and mechanical joint pipe. Fittings shall be coated and lined as specified

above for ductile iron pipe. The rubber gaskets for flanged, mechanical, and push on joints shall be as described below.

- C. Push-On Joints: Pipe using push-on joints shall be in strict accordance with ANSI/AWWA C111, latest revision and shall be as manufactured by American Cast Iron Pipe Company (Fastite Joint), United States Pipe Company (Tyton Joint), or Clow Corporation (Super Bell Tite Joint). Jointing materials shall be provided by the pipe manufacturer and installation shall be in strict accordance with the manufacturer's recommended practice.
- D. Mechanical Joints: Jointing materials for mechanical joints shall be provided by the pipe and fitting manufacturer. Materials assembly and bolting shall be in strict accordance with ANSI/AWWA C111 and ANSI/AWWA C153, latest revisions. Tee head bolts and nuts for mechanical joints shall be manufactured of CORTEN, high strength, low alloy, corrosion resistant steel as manufactured by NSS Industries, Plymouth, Michigan or an equal approved by the Engineer.
- E. Flanged Joints: Flanges shall be American Standard for 125 pound steam pressure with any special drilling and tapping as required to insure correct alignment and bolting. Gaskets shall be rubber full face type, minimum thickness of 1/8 inch. Flanged joints shall be made with bolts and nuts, studs with a nut on each end, or studs with nuts where the flange is tapped.

The number and size of bolts shall conform to the same American National Standard as the flanges. Unless noted otherwise, bolts and nuts shall be Grade B conforming to the ASTM Specifications for Steel Machine Bolts and Nuts and Tap Bolts, Designation A 307. Bolts and studs shall be of the same quality as machine bolts. Bolts and nuts shall have hexagonal heads. Where noted on the Drawings or where flanges are underground, stainless steel nuts and bolts shall be used for flanges. Stainless steel shall be Type 316 in accordance with ASTM A320, Class 2.

- 1. Machined Surfaces: Machined surfaces shall be cleaned and coated with a suitable rust preventative coating at the shop immediately after being machined.
- F. Restrained Joints: Restrained joints shall be provided for all buried piping systems at the location required to restrain the system thrust. Pipe joints and fitting shall be restrained as specified below.
    - 1. Manufactured Restrained Joints: Manufactured restrained joints shall be Flex-Ring, Lok-Ring or Lok-Fast manufactured by the American Cast Iron Pipe Company, Lok-Tyte or Tr-Flex Type manufactured by the United States Pipe Company as manufactured by McWane, or an equal approved by the Engineer. Joints shall be manufacturer's standard specifically modified push-on type joints with joint restraint provided by ductile iron retainer rings joined together by corrosion resistant, high strength steel tee head bolts and nuts or with joint restraint provided by a welded on retainer ring and a split flexible ring assembled behind the retainer ring.

Restrained joint pipe and fittings shall be ductile iron only and shall comply with applicable portions of this specification. Manufactured restrained joints shall be capable of deflection during assembly. Deflection shall not exceed 80 percent of the manufacturer's recommendations.

Tee head bolts and nuts for restrained joints shall be manufactured of CORTEN, high strength, low alloy, corrosion resistant steel as manufactured by NSS Industries, Plymouth, Michigan, or an equal approved by the Engineer.

2. Alternate Restrained Joints:

- a. When prior approval is obtained from the Engineer, ductile iron pipe and fittings with mechanical joints may be restrained using a follower gland which includes a restraining mechanism. When actuated during installation, the restraining device shall impart multiple wedging action against the pipe wall which increases resistance as internal pressure in the pipeline increases. The pipe must be suitable for use with the proposed device.

The joint shall maintain flexibility after installation. Glands shall be manufactured of ductile iron conforming to ASTM A536 and restraining devices shall be of head treated ductile iron with a minimum hardness of 370 BHN. The gland shall have standard dimension and bolting patterns for mechanical joints conforming to ASNI/AWWA C111 and C153, latest revisions.

Tee head bolts and nuts shall be manufactured of corrosion resistant, high strength, low alloy CORTEN steel in accordance with ASTM A242.

The restraining wedges shall have twist off nuts to insure proper torquing. The mechanical joint restraint device shall have a minimum working pressure rating of 250 psi with a minimum safety factor of 2 to 1 and shall be MEGALUG<sup>R</sup> as manufactured by EBBA Iron, Inc.. No other retainer gland type device will be acceptable. After installation prior to backfilling, all parts of the joint restraint system shall be coated with coal tar epoxy equal to Kop-Coat Bitumastic No. 300-M.

- b. When prior approval is obtained from the Engineer, ductile iron pipe and fittings with push on joints may be restrained using a restraining gasket similar to the "Field Lok" gasket manufactured by U.S. Pipe & Foundry. The device must be suitable for the pipe and pressure rating intended and is subject to approval by the Engineer. The required length of restrained joint pipe shall be provided on either side of all valves and fittings employing restraining devices. Restrained lengths

shall be calculated per DIPRA standards based on Type II laying conditions and an operating pressure of 150 psi, unless otherwise indicated.

## 2.02

### POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

- A. Gravity Drainage Piping: PVC pipe used for gravity drainage piping installed underground shall be SDR 26 pipe. Fittings shall be as specified in Section 02550.
- B. Small PVC Pressure Piping: Unless otherwise specified, all PVC pressure pipe smaller than 4 inches nominal diameter shall be Schedule 80 PVC or Endot Endpure HDPE, (as shown). Schedule 80 pipe shall have either solvent welded or threaded joints. PVC pressure pipe shall bear the approved seal of the National Sanitation Foundation (NSF). PVC pipe that is exposed to sunlight shall be manufactured with additives to provide resistance to ultraviolet deterioration. No glued joint pipe shall be installed below ground, unless other specified. All water pipe to be Class 200 (DR 21) gasketed bell and spigot pipe blue in color.
- C. Fittings: Socket type, solvent welded fittings for Schedule 80 PVC pipe shall be in conformance with ASTM D2467. Threaded type fittings for Schedule 80 PVC pipe shall be in conformance with ASTM D2464. All solvent welded or threaded joints shall be watertight.
- D. Flanges: Flanges for Schedule 80 PVC pipe shall be rated for a 150 psi working pressure with ANSI B16.1 dimensions and bolting pattern. Flanges shall be connected to PVC piping with either solvent welded or threaded joints in accordance with ASTM D2467 or ASTM 2464, respectively. Gaskets shall be neoprene, full faced type with a minimum thickness of 1/8 inch. Nuts and bolts shall be hexagonal with machine threads, manufactured of Type 316 stainless steel in accordance with ASTM A320, Class 2. Type 316 stainless steel flat washers with lock washers shall be used against PVC flanges.
- E. Solvent Cement: PVC solvent cement shall be in compliance with ASTM D2564 and in accordance with the pipe manufacturer's recommendations.
- F. Thread Lubricant: Lubricant for Schedule 80 threaded joints shall be Teflon tape only.
- G. Polyvinyl Chloride Pipe 4 Inches and Larger in Size for Pressure Service: Polyvinyl chloride pipe for nominal diameters 4 inches to 12 inches in size shall conform to the requirements of AWWA C900 with a dimension ratio of DR 18, pressure class 150, and gasketed integral bell ends. For PVC pipe larger than 12 inches for pressure service, the pipe shall conform to the requirements of AWWA C-905 with a minimum DR of 25, pressure rating of 165 psi, with gasketed integral bell ends. Pipe shall be designed for maximum working pressure of not less than 150 psi and with not less than a 4 to 1 sustained hydrostatic pressure safety factor. Fittings for C-900 PVC pipe shall be ductile iron fittings with restrained joint ends for potable water or reclaimed water lines, and restrained PVC fittings for sanitary force mains.

H. All PVC pipe installed shall be color coded for the service intended. Potable water piping shall be extruded blue, reclaimed water shall be lavender, force main white, and gravity sewer green. Care shall be taken to avoid exposure to sunlight. Pipe should be marked for its use in three places on the pipe barrel.

I. Joints (4 Inches and Larger PVC Pipe):

1. Bell and Spigot:

Pipe joints shall be made with integral bell and spigot pipe ends. The bell shall consist of an integral thickened wall section designed to be at least as strong as the pipe wall. The bell shall be supplied with factory glued rubber ring gasket with conforms to the manufacturer's standard dimensions and tolerances. The gasket shall meet the requirements of ASTM F477 "Elastomeric Seals (Gaskets) for Joining Plastic Pipe". PVC joints shall be "Ring-Tite" as manufactured by J-M Manufacturing Company, Inc. or an equal approved by the Engineer.

2. Restrained Joints:

Where indicated on Drawings, to prevent pipe joints and fittings from separating under pressure, pipe joints and fittings shall be restrained as follows:

- a. PVC pipe bell and spigot joints shall be restrained with EBBA Iron MEGALUG<sup>R</sup> Series 1500 Restrainer or an equal approved by the Engineer. The restraining device and Tee head bolts shall be manufactured of high strength ductile iron meeting ASTM A536, Grade 65-42-10. Clamping bolts and nuts shall be manufactured of corrosion resistant high strength, low alloy CORTEN steel meeting the requirements of ASTM A242.
- b. Cast iron mechanical joint fittings used with PVC pipe shall be restrained with the EBBA Iron MEGALUG<sup>R</sup> Series 2000 PV Restrainer or an equal approved by the Engineer. The restraining device and Tee head bolts shall be manufactured of high strength ductile iron meeting ASTM A536, Grade 65-42-10. Clamping bolts and nuts shall be manufactured of corrosion resistant high strength, low alloy CORTEN steel meeting the requirements of ASTM A242.
- c. Thrust Blocking. Provided concrete reaction or thrust backing on all pressure pipe lines four (4) inches in diameter or larger (except those having flanged joints or restrained joints) at all tees, plugs, caps, and at bends deflecting 22E or more, or movement shall be prevented by attaching suitable metal rods or straps as directed by the Engineer. Concrete used for this purpose shall be Class "C". Reference reaction blocking table shown on construction plan details.

- d. Joint restraint. Push on joints on either side of valves and fittings restrained by mechanical restraining devices shall be restrained with "Uni-Flange" mechanisms. The number of restrained joints shall be determined by DIPRA methods and a laying schedule shall be provided for approval by the Engineer prior to installation of joint restraint.

## 2.03 PVC FITTINGS (4 INCHES AND LARGER PVC PIPE)

1. Fittings shall be PVC and manufactured of the same design as the PVC pipe. PVC fittings 4 inches through 36 inches shall be PVC injection molded made of materials meeting or exceeding the requirements of cell class 12454-B material as defined in ASTM D1784. Fittings shall be manufactured with pipe that meets or exceeds AWWA C-905 standard. All PVC fittings must comply with or exceed ANSI/AWWA C907, Uni-B-12, Uni-B-14 standards. All PVC fittings must be certified by CSA to the CSA B137.3 standard as third party certification. The fittings must be of the same design as the PVC pipe with an HDB of 4000 psi and minimum SDR 25 wall thickness design. All fittings must have UL-FM approval, and shall comply with or exceed all ASTM Standards for fittings. Fittings must have NSF-61 certification for contact with potable water. PVC fittings shall be pressure rated to 165 psi or greater.
2. All restrained joint systems shall be pressure rated the same as the PVC pipe and fittings. All components of the restraint system shall meet or exceed all requirements of ANSI/AWWA C-111/A21.11 latest revision. Restraints shall provide a full 360 degree contact on the pipe with sufficient gripping action to secure the clamp to the pipe and be designed so that the restraint action is increased as a result of increases in the line pressure. Restraint devices for PVC pipe and fittings shall consist of split restraint ring installed on the spigot, connected to a split ring which seats behind the gasket race of the fitting. The split restraint ring shall incorporate a series of machined serrations (not "as cast") on the inside diameter to provide positive restraint, exact fit and 360 degree contact and support of the pipe wall. The two halves of the split backup ring shall interlock without the need for additional bolts and shall form a beveled leading edge to assure exact fit behind the fitting gasket race. Restraint devices shall be of ductile iron, ASTM A536, Grade 65-45-12 and connecting bolts shall be of high strength, low alloy material in accordance with ASNI/AWWA C111/A21.11. Restraint devices shall be Uni-Flange 1300 series or other approved restrained joint devices.

## 2.04 WALL SLEEVES, SEALS, PIPES AND NON-STANDARD CASTINGS

- A. Wall Sleeves: Wall sleeves shall be of cast iron, ductile iron or carbon steel. The sleeve shall be hot dipped galvanized after fabrication and shall have a waterstop located in the center of the wall. Sleeves shall be provided with seals and shall be sized as required for the installation of seals. Sleeves shall terminate flush with finished surfaces of walls and ceilings, and shall extend 2 inches above the finished floor unless otherwise shown on the Drawings.

1. Wall sleeves shall be installed for all piping passing through building walls and floors, except where noted on the Drawings. Sleeves shall be of sufficient size to pass the pipe without binding. Escutcheons shall be provided at walls and floor to completely conceal the sleeves smaller than 3 inches. Escutcheons shall be 304 SS split-type.
- B. Wall Sleeve Seals: Wall sleeve seals shall be modular mechanical type consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and wall sleeve. Links shall be loosely assembled with bolts to form a continuous rubber belt around the pipe with a pressure plate under each bolt head and nut. After the seal assembly is positioned in the sleeve, tightening of the bolts shall cause the rubber sealing elements to expand and provide an absolutely water-tight seal between the pipe and wall sleeve. The synthetic rubber shall be suitable for exposure to sludge and groundwater. Bolts, nuts and hardware shall be 18-8 stainless steel. The seals shall be Link Seal as manufactured by Thunderline Corporation or equal, and the wall sleeve and seal shall be sized as recommended by the seal manufacturer.
- C. Wall Pipes: Wall pipes shall be of the size and types indicated on the Drawings. All wall pipes shall be of ductile iron and shall have a central fin not less than 2 inch thick and the same diameter as the bolting flange cast midway of the length to form a waterstop. Each wall pipe shall be of the same grade, thickness and interior coating as the piping to which it is joined. Those portions of the wall pipes that are buried shall have a coal tar epoxy outside coating.
- D. Non-Standard Fittings and Castings: Fittings having non-standard dimensions and cast especially for this project shall be of an approved design. Fittings shall be manufactured to meet the requirements of the same specifications and shall have the same diameter and thickness as standard fittings but laying lengths and types of ends shall be determined by positions in the pipelines and by the particular piping to which it is connected. Flange facing and drilling shall conform to the 125 pound American National Standards Institute. Where required, flanges shall be drilled and tapped for studs. Other dimensions shall be substantially equal to corresponding parts of standard bell and spigot fittings.

## 2.05 PIPE COUPLINGS

- A. Couplings:
1. Pipe couplings used to joint two pieces of plain end pipe shall be sized to suit the outside diameter of the pipe ends to be jointed. Transition couplings shall be used to join pipes of different outside diameters. Pipe couplings shall be bolted type with steel middle ring and end followers. The couplings shall be restrained for the test pressure of line using approved retaining system.
  2. All carbon steel parts of the coupling shall be coated on the interior and exterior with a fusion bonded thermosetting epoxy coating with a 12 mil

nominal coating thickness. The coating shall be equal to AL-CLAD as manufactured by Dresser Industries, Inc.

3. Gaskets for the coupling shall be wedge type manufactured of Buna-N resilient rubber.
4. Bolts shall be manufactured of high strength Type 304 stainless steel with Type 316 stainless steel hexagonal nuts. Bolts and nuts shall conform dimensionally to ANSI/AWWA C111, latest revision.
5. Couplings shall be Style 38 as manufactured by Dresser Industries, Inc. or an equal approved by the Engineer.

## 2.06 PVC BALL AND BALL CHECK VALVES

- A. PVC Ball Valves: All PVC ball valves 2 inch through 4 inch in size shall be of a one piece capsule type manufactured of Type 1, Grade 1 PVC. Ball valves shall be true union design with two-way blocking capability and shall have solvent welded socket or NPT threaded ends. Ball valves shall have Teflon seats with Viton backing cushions and Viton O-ring seals, and shall be designed for a 150 psi water working pressure at 120EF. Valves shall be supplied with ABS lever operating handles. PVC ball valves shall be manufactured by Asahi/America, or equal approved by the Engineer.
- B. PVC Ball Check Valves: All PVC ball check valves 1 inch through 2-1/2 inch in size shall be of a solid thermoplastic construction manufactured of Type 1, Grade 1 PVC. Ball check valves shall be true union design with solvent welded socket or NPT threaded ends. Ball check valves shall be furnished with a solid thermoplastic ball. Ball seat shall be Teflon coated Viton. The same seal shall function as both the ball seat and the union seal. PVC ball check valves shall be designed for a 150 psi water working pressure at 120EF. Valves shall be manufactured by Asahi/America, or an equal approved by the Engineer.

## 2.07 GATE VALVES

- A. Bronze Gate Valves: Gate valves installed aboveground, less than 2 inches in size and smaller, shall be Class 150 all bronze valves conforming to Fed. Spec. WW-V-54d, Type I, Class B designed for a non-shock water pressure of 300 psi. Bronze for valve body and internals shall be in accordance with ASTM B16.18. Valves shall be furnished with screwed ends, handwheel operator, non-rising stem, one-piece solid wedge disc and screwed bonnet. Valves shall be as manufactured by Crane, Powell or an approved equal. The minimum weight of valves shall be as follows:

<u>Valves Size</u> <u>(inches)</u>	<u>Valve Weight</u> <u>(inches)</u>
2	1.0
3/4	1.5
1	2.5

**B. Ductile Iron Gate Valves:**

1. Ductile iron gate valves shall open by turning to the left (counter-clockwise), when viewed from the stem. When fully open, gate valves shall have a clear waterway equal to the nominal diameter of the pipe. Operating nut or hand wheel shall have an arrow cast in the metal indicating the direction of opening. Each valve shall have the manufacturer's distinctive marking, pressure rating and year of manufacture cast in the body. Prior to shipment from the factory, each valve shall be tested by applying to it a hydrostatic pressure equal to twice the specified working pressure. Hydrostatic and leakage tests shall be conducted in strict accordance with ANSI/AWWA C509, latest revisions.
2. Gate valves with nominal sizes from 2 to 24 inches shall conform to ANSI/AWWA C509, latest revision, and shall be designed for a minimum working pressure of 250 psi. Valves shall be ductile iron body resilient seat type with O-ring stem seals. The valve stem, stem nut, glands and bushings shall be manufactured of zinc free bronze. Valve disc shall be constructed to assure uniform seating pressure between disc seat ring and body seating surface. Resilient seat of valve shall be formed by a special corrosion and chloramine resistant, synthetic elastomer which is permanently bonded to and completely encapsulates a ductile iron valve disc. Interior of valve body shall be coated with a fusion bonded, thermosetting epoxy coating in accordance with AWWA C550, latest revision. Coating shall be holiday free with a minimum thickness of 12 mils. Surfaces shall be clean, dry and free from rust and grease before coating. Exterior surfaces shall be coated as specified hereinafter. Resilient seated type gate valves shall be as manufactured by U.S. Pipe or equal.
3. Valve Joints: All gate valves shall have either mechanical joint, restrained joint or flanged ends to fit the pipe run in which they are to be used. Gate valves installed on push on joint pipe shall have mechanical joint ends unless otherwise specified.
4. Valve Operators: Gate valves shall open left (counter-clockwise) when viewed from the stem. Unless otherwise shown on the Drawings or specified herein, gate valves shall have non-rising stems. Buried gate valves shall be furnished with a 2 inch square AWWA standard nut operator with a valve box and cover. Gate valves located aboveground or inside structures shall be furnished with a handwheel operator which shall have an arrow cast in the metal indicating the direction of opening. Gate valves used as isolation valves for reduced pressure backflow preventers shall be of the open screw and yoke (OS&Y) design with a handwheel operator.

5. Exterior Valve Coatings: All exterior surfaces of iron body gate valves shall be clean, dry and free from rust and grease before coating. For buried service, the exterior ferrous parts of all valves shall be coated at the factory with coal tar epoxy with a minimum total finish dry film thickness of 20 mils. Prior to backfilling, all uncoated units, bolts, glands, rods and other parts of joints shall be coated in the field with coal tar epoxy equal to Kop-Coat Bitumastic No. 300-M. For valves installed aboveground, the exterior ferrous parts of all valves shall be shop primed at the factory with one coat, minimum dry film thickness 1.5 mils, of a primer with rust-inhibitive pigments and synthetic resins. Following installation, aboveground valves shall be finish painted in accordance with manufactures recommendations.

## 2.08 PINCH CHECK VALVES

- A. Valves are to be of the flow operated check type with flanged joint ends on both check sleeve and metal body. Port areas shall be 100% of the mating pipe port area. The port area shall contour down to a duckbill which shall allow passage of flow in one direction and prevent reverse flow in the other direction. The flexible duckbill sleeve shall be one piece rubber construction with fabric reinforcement. The flange shall be drilled to ASNI B16.1, Class 125/ANSI B16.5 Class 150 standard. Valve body shall be drilled and tapped for flushing connection on top and bottom of the housing. Valve body shall be two piece split body construction. The two halves shall be sealed by diamond shaped cross section rubber gaskets permanently locked by a groove cast in the valve body. Company name and location shall be cast onto the valve body. The valve shall be designed for a maximum back pressure of 100 psi. The valve shall be red valve series 33 or equal.
- B. Interior Valve Coating: Prior to shipment from the factory, the interior ferrous surfaces of the valve, except for finished, non-ferrous or bearing surfaces, shall be coated with a fusion bonded, thermosetting epoxy coating in accordance with AWWA C550, latest revision. Coating shall be holiday free with a minimum thickness of 12 mils. Surfaces shall be clean, dry and free from rust and grease before coating.
- C. Exterior Valve Coating: All exterior surface of swing check valves shall be clean, dry and free from rust and grease before coating. For valves installed in below ground valve vaults, the exterior ferrous parts of all valves shall be coated at the factory with coal tar epoxy with a minimum total finish dry film thickness of 20 mils. Following installation, all uncoated nuts, bolts, glands, rods and other parts of joints shall be coated in the field with coal tar epoxy equal to Kop-Coat Bitumastic No. 300-M. For valves installed aboveground, the exterior ferrous parts of all valves shall be shop primed at the factory with one coat, minimum dry film thickness 1.5 mils, of a primer with rust-inhibitive pigments and synthetic resins. Following installation aboveground valves shall be finish painted in accordance with manufacturer's recommendations.

## 2.09 PLUG VALVES

- A. General: Plug valves shall be non-lubricated eccentric type with flanged or mechanical joint ends as specified below. Valves shall open by turning to the left (counter-clockwise), when viewed from the stem. Port area of valves shall be a minimum of 80 percent of full pipe area. Valve pressure ratings, body flanges and wall thicknesses shall be in full conformance with ASNI B16.1, latest revision. Valves shall seal leak-tight against full rated pressure in both directions. Prior to shipment from the factory, each valve shall be hydrostatically tested as follows: Valve seats shall be tested to provide leak tight shut off to 175 psi for valves through 12 inch and 150 psi for valves 14 inches and larger, with pressure in either direction. In addition, a hydrostatic shell test shall be performed with a plug open to a pressure twice that of rating specified above to demonstrate overall pressure integrity of the valve body. Plug valves shall be eccentric plug valves as manufactured by DeZurik, Milliken, or approved equal.
- B. Eccentric Plug Valves: Eccentric plug valves shall be Series 100 as manufactured by DeZurick or equal. Valve bodies shall be constructed of high strength cast iron conforming to ASTM A126, Class B and AWWA C504, latest revisions. Valve bodies shall be cast with raised eccentric seats which have a corrosion resistant welded in overlay of not less than 90 percent pure nickel on all surfaces contacting the plug face. Valve seats shall be in accordance with AWWA C504 and AWWA C507, latest revisions. Valves shall be furnished with resilient faced plugs with Neoprene facing, suitable for use with sludge. Valves shall be furnished with replaceable, permanently lubricated, stainless steel, sleeve-type bearings in the upper and lower plug stem journals. Plug stem bearings shall comply with AWWA C504 and C507, latest revisions. Valves shall be bolted bonnet design. Valves shaft seals shall be designed so that they can be repacked without removing the bonnet and the packing shall be adjustable. Packing material shall be Buna-Vee type packing. Valve shaft seals shall be in accordance with AWWA C504 and AWWA C507, latest revisions. All exposed valve nuts, bolts, springs, washers and the like shall be Type 304 stainless steel.
- C. Interior Valve Lining: All interior ferrous surfaces of the valve that will have contact with the leachate except the valve seating surfaces shall be coated with a factory applied, fusion bonded, thermosetting epoxy coating in accordance with AWWA C550, latest revisions. Coating shall be holiday free with a minimum thickness of 12 mils. Surfaces shall be clean, dry and free from rust, oil and grease before coating.
- D. Exterior Valve Coating: All exterior surfaces of plug valves shall be clean, dry and free from rust and grease before coating. For buried service, the exterior ferrous parts of all valves shall be coated at the factory with coal tar epoxy with a minimum total finish dry film thickness of 20 mils. Prior to backfilling, all uncoated nuts, bolts, glands, rods and other parts of joints shall be coated in the field with coal tar epoxy equal to Kop-Coat Bitumastic No. 300-M. For valves installed above ground, the exterior ferrous parts of all valves shall be shop primed at the factory with one coat, minimum dry film thickness 1.5 mils, of a primer with rust inhibitive pigments and synthetic resins. Following installation aboveground valves shall be finish painted in accordance with manufacturer's recommendations.

- E. Valve Joints: All plug valves installed aboveground, in valve vaults or on flanged piping shall have flanged ends. Flanges shall comply with facing, drilling and thickness of ANSI Standards for Class 125 dimension. Nuts and bolts for flanged connections in valve vaults or corrosive atmospheres shall be Type 316 stainless steel in accordance with ASTM A320, Class 2. Nuts and bolts for aboveground installations or non-corrosive atmospheres shall be carbon steel in accordance with ASTM A307, Grade B. All buried plug valves shall have mechanical joint ends with dimensions, bolting patterns and assembly in strict accordance with ANSI/AWWA C111, latest revision. Tee head bolts and nuts for mechanical joints shall be manufactured of CORTEN-A, high strength, low alloy, corrosion resistant steel as manufactured by NSS Industries, Plymouth, Michigan or an equal approved by the Engineer.
- F. Mechanical Valve Actuators:
1. All plug valves installed in valve vaults or buried underground shall have actuators designed for buried and submerged service. Valves shall have seals on all shafts and gaskets on valve and actuator covers to prevent entry of water and dirt. Actuator mounting brackets for buried and submerged service shall be totally enclosed and shall have gasket seals. All exposed valve nuts, bolts, springs, washers and the like shall be Type 304 stainless steel.
  2. All plug valves 6 inch in size and larger shall be furnished with mechanical gear actuators. Gear actuators shall be furnished with AWWA Standard 2 inch square operating nuts for buried valves, or handwheel, chainwheel or 2 inch square nut operators for aboveground or valve vault installation, as shown on the Drawings. Gear actuator shall be sized for the maximum pressure differential across the valve, equal to the pressure rating of the valve. All gearing shall be enclosed in a high strength cast iron housing, suitable for running in a lubricant. Housing shall be provided with seals on all shafts to prevent the entry of dirt and water into the actuator. Actuator shaft and quadrant shall be supported on permanently lubricated bronze bearings. Actuator shall clearly indicate valve position for aboveground and valve vault installations and an adjustable stop shall be provided to set closing torque. Actuator shall be capable of withstanding an over-torque without damage up to 450 foot pounds for 2 inch square nut operators and to 300 foot pounds for handwheel or chainwheel operators.
  3. Four inch and smaller aboveground valves shall be furnished with manual actuators, one-quarter turn to open. Actuator shall be supplied with an AWWA Standard 2 inch operating nut with a standard valve operating lever.

## 2.10 BUTTERFLY VALVES

- A. General: All butterfly valves shall be of the tight closing, rubber seat type with rubber seats that are securely fastened to the valve body or disc. No metal to metal seating surfaces will be permitted. Valves shall be bubble tight at rated pressures with flow in either direction, and shall be satisfactory for applications involving

throttling service and/or frequent operation and for applications involving valve operation after long periods of inactivity and for buried installation. Valve discs shall rotate 90 degrees from the full open position to the tight shut position. Valves shall meet the full requirements of AWWA Standard C 504 for Class 150B, short body, flanged or mechanical joint as required. Wafer design valves are not acceptable, except when indicated on the Drawings. The manufacturer shall have manufactured tight closing, rubber seat butterfly valves for a period of at least five years. All valves shall be Henry Pratt Company, DeZurik, Mueller, or equal.

- B. Valve Body: Valve bodies shall be constructed of cast iron ASTM A126 Class B or ASTM A48 Class 40. Ends shall be mechanical joint for buried service and flanged for aboveground use. Flange drilling shall be 125 pound in accordance with ANSI B16.1. Two trunnions for shaft bearings shall be integral with each valve body. When disc has the rubber seat, the valve body shall have a 18-8 Type 304 stainless steel body seat. The port diameter shall be no smaller than one inch less than the nominal valve size.
- C. Valve Shaft: The valve shaft may consist of a one piece unit extending completely through the valve unit or may be the "stub shaft" type. Materials to be stainless steel 18-8 Type 304.
- D. Valve Discs: Valve discs shall be constructed either of cast iron ASTM A126 Class B, ductile iron ASTM A536 or cast iron ASTM A48 each with Type 316 stainless steel seating edge or the entire disc may be constructed of cast 316 stainless steel. The stainless steel seating edge is not applicable to rubber seat disc type valves.
- E. Valve Seats: Valve seats shall be of a synthetic or natural rubber compound and any be mounted on the valve body.
- F. Valve Bearings: Valves shall be fitted with sleeve type bearings. Bearings shall be corrosion resistant and self-lubricating.
- G. Valve Packings: Packing shall be self-adjusting Chevron type or of the O-ring type.
- H. Interior and Exterior Valve Coatings: The valve shall be coated similarly as described in Section 2-05 C and D.

## 2.11 SWING CHECK VALVES

- A. Swing check valves 2-inch through 12-inch in size shall conform to AWWA C-508, latest revision, and shall be designed for a minimum water working pressure of 150 psi. Check valves shall have cast iron body, swing type and ends shall be flanged, Class 125 in accordance with ANSI B16.1. When open, the valve shall have a straight way passage with a minimum flow area equal to the full pipe area. Swing check valves shall be completely bronze fitted with renewable bronze seat ring and a rubber faced disc; valve hinge pin shall be stainless steel. Check valves shall be supplied with an outside lever and weight.

- B. Swing check valves shall absolutely prevent the return of water back through the valve when the inlet pressure decreases below the downstream pressure. The check valve shall be constructed such that the disc and body seat ring may be easily removed and replaced without removing the valve from the line. Each valve shall be hydrostatically tested at the factory, at a test pressure of 300 psi.
- C. Interior Valve Coating: Prior to shipment from the factory, the interior ferrous surfaces of the valve, except for finished, non-ferrous or bearing surfaces, shall be coated with a fusion bonded, thermosetting epoxy coating in accordance with AWWA C-550, latest revision. Coating shall be holiday-free with a minimum thickness of 12 mils. Surfaces shall be clean, dry and free from rust and grease before coating.
- D. Exterior Valve Coating: All exterior surface of swing check valves shall be clean, dry and free from rust and grease before coating. For valves installed in below ground valve vaults, the exterior ferrous parts of all valves shall be coated at the factory with coal tar epoxy with a minimum total finish dry film thickness of 20 mils. Following installation, all uncoated nuts, bolts, glands, rods and other parts of joints shall be coated in the field with coal tar epoxy equal to Kop-Coat Bitumastic No. 300-M. For valves installed aboveground, the exterior ferrous parts of all valves shall be shop primed at the factory with one coat, minimum dry film thickness 1.5 mils, of a primer with rust-inhibitive pigments and synthetic resins. Following installation aboveground valves shall be finish painted in accordance with manufacturer's recommendations.

## 2.12 SERVICE SADDLES AND CORPORATION STOPS

- A. Service Saddles: Service saddles shall have ductile iron bodies in accordance with ASTM A536, latest revision, with double stainless steel straps. Bodies shall be brass or ductile iron, body shall have a fusion bonded nylon coating with a minimum thickness of 12 mils. Straps shall be Type 304 stainless steel with premium grade Type 304 L stainless steel bolts and Type 304 stainless steel washers and nuts. The nuts shall be Teflon coated. The gasket material shall be an elastomeric compound resistant to degradation by oil, natural gas, acids, alkalies, most aliphatic fluids and leachate. The outlet of the saddle shall have NPT threads. Service saddles shall be Rockwell No. 317, Ford or an equal approved by the Engineer.
- B. Corporation Stops: Corporation stops shall be all bronze construction in accordance with AWWA C80, latest revision. Inlet threads shall be NPT iron pipe threads and the outlet connections shall be of the packed joint type suitable for use with Schedule 80 PVC pipe. Corporation stops shall be Ford Ball Corp Type FB 1102, McDonald or an equal approved by the Engineer.
- C. Polyethylene Tubing. Service tubing shall be nominal wall polyethylene tubing conforming to the requirements of ASTM D-2737 and AWWA C-901. Tubing shall be manufactured from prime virgin PE-3408 high density polyethylene (HDPE) resin. Each coil of tubing shall be spiral wrapped with four (4) inch wide black .004 polyethylene film with minimum 2% carbon black content to shield the tubing from

ultraviolet and violet light. Reclaimed water service tubing shall be lavender in color.

- D. Tubing shall be DR 9.0 CTS OD and supplied in 100 foot rolls. Tubing shall conform to all requirements set forth in AWWA C901. Tubing shall be marked with the following information at not more than 5 foot intervals: nominal size, material code designation, dimension ration and diameter base, AWWA pressure class, AWWA designation and manufacturer's name or trademark and product record code.
- E. Fittings for use with polyethylene (PE) tubing shall be brass containing a pressure sealing O-ring and unidirectional grip ring and shall be designed for "press-on" or "stab-on" installation, and manufactured by Ford Meter Box Company.

### 2.13 SOLENOID VALVES

- A. Solenoid valves shall be 2 way type for normally closed operation designed for not less than a 150 psi water working pressure. The valves shall have forged stainless steel Series 300 bodies for 3/4 inch and smaller and brass bodies for 1 inch and larger with NPT threaded ends, Buna N seals/disks and NEMA 4X Red hat II solenoid enclosures. The valves shall operate on 120 VAC power, shall have threaded conduit hubs, standby manual operators and shall not require a minimum operating pressure differential for standby operation. The valves shall be provided with a manual override. The valves shall be Series 8210G for 3/4 inch and smaller and Series 8221G for one inch and larger as manufactured by Automatic Switch Company or approved equal.

### 2.14 FLEXIBLE EXPANSION JOINTS

- A. Flexible expansion joints shall be of the molded wide arch design manufactured of chloroprene (neoprene) rubber with polyester reinforcement. Chloroprene (neoprene) body shall be supplied with a hypalon coating. Joints shall be flanged suitable for 150 psi water working pressure and in accordance with ANSIB16.1 dimensions and bolting patterns. Flanged ends shall be furnished and galvanized, split ductile iron retaining rings.
- B. Provide limit restraint bolts on all pump suction and discharge lines. Expansion joints 6 inches and larger in size shall have a minimum of four limit restraint bolts. Restraint bolts and nuts shall be Type 304 stainless steel.
- C. Minimum performance for flexible expansion joints shall be as follows:

Size (in.)	Axial Compression (inches)	Axial Elongation (inches)	Lateral Deflection (inches)	Angular Deflection (degrees)
2	1-3/4	3/4	3/4	30
3	d.o.	d.o.	d.o.	30

4	d.o.	d.o.	d.o.	25
5	d.o.	d.o.	3/4	25
6	d.o.	d.o.	1	20
8	d.o.	d.o.	d.o.	20

- D. Flexible expansion joints shall be Style 1015 Maxi-Joint as manufactured by General Rubber Corporation, Style 100 Metrasphere as manufactured by the Metraflex Company or an equal approved by the Engineer. Flexible joints for pump suction and discharge piping shall be designed for leachate service at 250 degrees F.

## 2.15 PRESSURE GAUGE ASSEMBLIES

- A. Pressure gauges shall have the following design features: glycerin filled, 2 inch dial, aluminum dial with black numerals on white background, Type 316 stainless steel bourdon tube and movement, 300 series stainless steel case and ring, safety glass lens, threaded lens retaining ring, adjustable pointer with over-pressure stop and zero pointer stop, blowout protection, 2 inch Type 316 stainless steel stem mounting and 1.0 percent accuracy based on full scale. Provide Type 316 stainless steel pressure snubbers on all gauges not protected by seals. Pressure gauges shall be as manufactured by U.S. Gauge, Ashcroft, Marshalltown, Marsh, or approved equal.
- B. Pressure Gauge Service and Ranges: Pressure gauges shall be furnished for the following services with the indicated ranges. Diaphragm seals shall be furnished for gauges as indicated.

## 2.16 VALVE BOXES

- A. Furnish, assemble, and place a valve box over the operating nut for each buried valve. The valve box shall be designed so as to prevent the transmission of surface loads directly to the valve or piping.
- B. Valve boxes shall be of the adjustable slide type of suitable length with an interior diameter of not less than 5 inches. The valve boxes shall be manufactured of cast iron and shall be of the two piece design including a bottom section and top section with cover. The cast iron cover shall be shaped and labeled for the appropriate service designation. The top section shall be adjustable for elevation and shall be set to allow equal movement above and below finished grade.
- C. The castings shall be manufactured of clean, even grain, gray cast iron conforming to ASTM A48, Class 30B for Gray Iron Castings; and shall be smooth, true to pattern, free from blow holes, sand holes, projections and other harmful defects. The seating surfaces of both the cover and the top section shall be machined so that the cover will not rock after it has been seated.
- D. The valve boxes shall be coated inside and outside with an asphaltic coating prior to machining, so that the machined seating surfaces will be free of any coating. Cast

iron valve box assemblies shall be Clow Corp. No F2452, Tyler Corp. Series 6855 or 6865 or an approved equal.

- E. Valve extension stems shall be provided for all buried valves when operating nut is deeper than 3 feet below final grade.

## 2.17 PIPE AND VALVE IDENTIFICATION SYSTEMS

- A. Not Included

## 2.18 GLOBE VALVES AND ANGLE VALVES

- A. Globe valves and angle valves shall be suitable for throttling flows of liquid, oil, gas and air lines. Valves shall have end connections as indicated on the Drawings and shall be suitable for a working pressure of not less than 150 psi.
- B. Each valve shall have self-lubricating TFE-impregnated asbestos packing to provide a tight stem steel. Valves shall have a removable bonnet in order to facilitate dismantling and reassembly of the valves.
- C. Globe valves shall be Crane Model No. 1, Stockham Valves Figures B-16, or equal. Angle valves shall be Crane Model No. 2, Stockham Valves Figure B-216, or equal.

## 2.19 PRESSURE REGULATING VALVE

- A. Pressure regulating valves shall be of bronze body construction, seat shall be of stainless steel, diaphragm shall be Buna N.
- B. Regulator shall have a maximum pressure limit of 100 psi and the pressure reduction range shall be to 5 psi for all the services except for belt washwater. The maximum and minimum pressure variation range for the belt washwater shall be per gravity belt supplier's recommendations. The regulator shall be a direct acting, spring loaded, diaphragm type for hydraulic operation, and shall be capable of delivering a constant pressure. An adjusting screw shall be easily accessible for changing the outlet pressure.
- C. Valves shall be installed in strict accordance with the manufacturer's recommendations. The manufacturer shall be Watts, or equal.

## 2.20 TIE RODS

- A. When prior approval is obtained from the Engineer, ductile iron pipe, fittings, and valves may be restrained using tie bolt joint restraint. Joint restraint materials for this method of restraint shall be the Super-Star SST Series Joint Restraint Joint System as manufactured by Star National Products, a Division of Star Industries, Inc., Columbus, Ohio, or an equal approved by the Engineer.

- B. All bolts, nuts, washers, tie rods and other fasteners for the joint restraint system shall be manufactured of CORTEN high strength, low alloy, corrosion resistant steel in conformance with ASTM A242. Tie bolts shall be manufactured of heat treated CORTEN steel. Tie rods and all fasteners for the system shall be galvanized in conformance with the requirements of ASTM A123. Tie rods shall have a minimum diameter of 3/4 inch. The number of tie rods required per joint shall be as recommended by the manufacturer.
- C. Prior to backfilling after installation, all parts of the joint restraint system shall be coated with coal tar epoxy equal to Kop-Coat Bitumastic No. 300-M, for a minimum dry film thickness of 20 mils.

## 2.21 REDUCED PRESSURE BACKFLOW PREVENTERS

- A. Standards of Construction: Backflow prevention devices shall be manufactured in accordance with AWWA C506, latest revision, American Society of Sanitary Engineering Standards, and the University of Southern California Foundation for Cross Connection Control and Hydraulic Research "Manual of Cross Connection Control", latest edition.
- B. Product Handling: Exercise care in transporting and handling backflow preventers to avoid damage. Inside of backflow preventers shall be kept free of dirt and debris.
- C. Reduced pressure principle backflow preventers shall include an integral sensing system that will automatically open a relief valve whenever the differential pressure between the inlet supply and the reduced pressure zone drops to 2 psi. The relief valve shall remain open until a positive pressure differential of 2 psi is re-established. If pressure upstream of the first check valve drops to atmospheric or below, the relief valve shall remain fully open providing an internal air gap between the first check valve and the water level in the reduced pressure zone. The unit shall also be constructed such that any minor leakage of the second check valve will result in visible flow from the relief valve, even if the first check valve is totally disabled.
- D. Reduced pressure principle backflow preventers shall have all bronze bodies for sizes 22 inches and smaller and all ductile iron bodies for sizes 3 inches and larger. Ductile iron bodies shall be coated with a fusion bonded thermosetting epoxy coating in accordance with AWWA C550 with a minimum, holiday free, coating thickness of 12 mils. The reduced pressure backflow preventer shall consist of two independently operated, spring loaded, wye pattern, poppet type check valves designed for installation in a normal horizontal flow attitude. An independent spring loaded relief valve shall be located between the two check valves. Check valve assemblies, springs and seats and all other internal parts shall be constructed of Type 316 stainless steel. Relief valve body and trim shall be constructed of bronze. Check valve and relief valve seats shall be field replaceable without removing the device from the service line. Backflow preventers shall be designed for a working pressure of 200 psi and a temperature range of 32EF to 140EF. The backflow preventer shall be manufactured as a complete unit including test cocks, and upstream and

downstream isolation valves. The test cocks shall be manufactured of bronze and shall be arranged such that the unit can be tested without removing the unit from the line.

- E. Isolation Valves: Reduced pressure backflow preventers shall be furnished complete with isolation valves, For sizes 22 inches and smaller, the isolation valves shall be all bronze ball valves with Buna N O-rings and valve seats, and a lever operating handle. Ball valves shall be in accordance with AWWA C80, latest revision. For sizes 3 inches and larger, the isolation valves shall be resilient seated gate valves with flanged ends and OS&Y handwheel operators. Gate valves shall be as specified and described hereinbefore.
- F. Exterior Coating: The exterior ferrous surfaces of the reduced pressure backflow preventer and the isolation valves shall be shop primed at the factory with one coat, minimum dry film thickness 1.5 mils, of a primer with rust inhibitive pigments and synthetic resins compatible with the finish coats. Following installation, the backflow preventer unit and aboveground piping shall be finish painted in accordance with manufacturer's recommendations. All surfaces to be coated shall be clean, dry and free of rust, oil and grease.
- G. Acceptable Manufacturers: Reduced pressure principle backflow preventers shall Model 825 as manufactured by Febco, or an equal approved by the Engineer.

## 2.22 TAPPING SLEEVES AND VALVES

- A. Tapping sleeves shall be designed for a water working pressure of 150 psi and shall be mechanical joint end type. Tap shall be done under pressure and without interruptions of service. Taps shall be tested at factory to 175 psi.
- B. Tapping valves shall be as specified herein under Gate Valves.
- C. The manufacturer shall furnish the services of a supervisor who will direct all operations for the installation of material, attachment of tapping machine and operation of the machine in making the connection. The Contractors shall bear all such rental and supervision costs, and all other related costs.
- D. Tapping sleeves and valves shall be the product of one of the following manufacturers, or equal: Mueller, Clow, M&H.

## 2.23 FLANGED ADAPTERS (WHEN APPLICABLE)

- A. For joining plain end or grooved end pipe to flanged pipes and fittings.
- B. Adapters shall conform in size and bolt hole placement to ANSI standards for steel and/or cast iron flanges 125 or 150 pound standard unless otherwise required for connections.

C. Exposed Sleeve Type:

1. Constructed from steel.
2. Coating: In accordance with manufacturer's recommendations.
3. Bolts: Carbon steel.
4. Acceptable Manufacturers:
  - a. Dresser Manufacturing Company - Style 128 for cast iron ductile iron and steel pipes with diameters of two (2) inches through 96 inches.
  - b. Or equal.

2.24 FIRE HYDRANTS

- A. Hydrants shall comply with AWWA Standard C402 "Fire Hydrants for Ordinary Water Works Service", and shall be equipped with a minimum of one (1) pump outlet nozzle 4 2 inches in diameter and two (2) hose nozzles 2 2 inches in diameter. Threads, nozzle caps, operating nuts and color shall conform to City standards. Units shall be traffic types with breakable safety clips, or flange, and stem, with safety coupling located below barrel break line to preclude valve opening. Hydrants shall be dry top. Outlet nozzles shall be on the same place, with minimum distance of 18 inches from center of nozzles to ground line. Valve shall be compressive type with 52 inches minimum opening and hose inlet connection to be 6 inches minimum. Hydrants shall open left by Mueller A-423 or Clow Medallion Hydrant (AWWA C-502). Hydrants must drain.

PART 3 - EXECUTION

3.01 INSPECTION

- A. All pipe, fittings, valves and other material shall be subject to inspection and approval by the Engineer after delivery, and no broken, cracked, imperfectly coated, or otherwise damaged or unsatisfactory material shall be used. When a defect or crack is discovered, the injured portion shall not be installed. Cracked pipe shall have the defect cut off at least 12 inches from the break in the sound section of the barrel.

3.02 GENERAL INSTALLATION REQUIREMENTS

- A. Excavation, backfill, and compaction shall conform to the provisions of Section 02100.
1. Pipe Cradle: Upon satisfactory installation of the pipe bedding material as specified, a continuous trough for the pipe barrel and recesses for the pipe bells or couplings shall be excavated by hand digging. When the pipe is laid

in the prepared trench, true to line and grade, the pipe barrel shall receive continuous, uniform support and no pressure will be exerted on the pipe joints from the trench bottom.

- B. Cover for underground piping shall not be less than that indicated on the Drawings. The minimum cover for pipe shall be 36 inches. In areas where other piping conflicts preclude the maximum cover desired, the piping shall be laid to provide the maximum cover obtainable.
- C. Pipe, fittings, valves and accessories shall be installed as shown or indicated on the Drawings.
- D. All connections to existing piping systems shall be made as shown or indicated on the Drawings after consultation and cooperation with authorities of the Owner.
- E. Pipe Joint Deflection: Whenever it is desirable, and approved by the Engineer, to deflect pipe joints to avoid obstructions or to maintain required alignment, the amount of the joint deflection shall not exceed 80 percent of the maximum limits allowed by the pipe manufacturer.
- F. In preparation for pipe installation, placement (stringing) of pipe should be as close to the trench as practical on the opposite side of the trench from the excavated material. The bell ends of the pipe should point in the direction of the work progress.
- G. Pipe and fittings shall be laid accurately to the lines and grades indicated on Drawings or required. Where grades for the pipeline are not indicated on the Drawings, maintain a uniform depth of cover with respect to finish grade. Care shall be taken to insure a good alignment both horizontally and vertically and to give the pipe a firm bearing along its entire length. Any pipe which has its grade or joint disturbed after laying shall be taken up and re-laid.
- H. All pipe and fittings shall be cleared of sand, dirt, and debris before laying. All precautions shall be taken to prevent sand, dirt or other foreign material from entering the pipe during installation. If necessary, a heavy, tightly woven canvas bag of suitable size shall be placed over each end of the pipe before lowering into the trench and left there until the connection is made to the adjacent pipe. Any sand, dirt, or other foreign material that enters the pipe shall be removed from the pipe immediately. Interior of all pipe and fittings shall be kept clean after installation until acceptable in the complete work.
- I. Any time that pipe installation is not in progress, the open ends of pipe shall be closed by a watertight plug or other method approved by the Engineer. Plugs shall remain in pipe ends until all water is removed from the trench. No pipe shall be installed when trench conditions are unsuitable for such work, including standing water, excess mud, or rain.

- J. After pipe has been laid, inspected, and found satisfactory, sufficient backfill shall be placed along the pipe barrel to hold the pipe securely in place while conducting the preliminary hydrostatic test. No backfill shall be placed over the joints until the preliminary test is satisfactorily completed, leaving them exposed to view for the detection of visible leaks.
- K. Upon satisfactory completion of the hydrostatic test, backfilling of the trench shall be completed.
- L. Aboveground and Exposed Piping: Piping shall be cut accurately to measurements established at the job site and shall be worked into place without springing or forcing, properly clearing all equipment access areas and openings. Changes in sizes shall be made with appropriate reducing fittings. Pipe connections shall be made in accordance with the details shown and manufacturer's recommendations. Open ends of pipe lines shall be properly capped or plugged during installation to keep dirt and other foreign material out of the system. Pipe supports and hangers shall be provided where indicated or as required to insure adequate support of the piping.

### 3.03 INSTALLATION OF DUCTILE IRON PIPE

#### A. Handling and Cutting Pipe:

- 1. Care shall be taken in handling, cutting, and laying ductile iron pipe and fittings to avoid damaging the pipe and interior coal tar epoxy or cement mortar lining, scratching or marring machined surfaces, and abrasion of the pipe coating. All cracked pipe and fittings shall be removed at once from the work at no additional cost to the Owner.
- 2. Pipe cutting shall be done in a neat workmanlike manner without creating damage to the pipe and interior coal tar epoxy or cement mortar lining. Ductile iron pipe may be cut using an abrasive pipe saw, rotary wheel cutter, guillotine pipe saw, milling wheel saw or oxyacetylene torch. Cut ends and rough edges of ductile iron pipe shall be ground smooth. For push-on joint connections, the cut end shall be beveled to prevent gasket damage during joint assembly. Interior lining shall be repaired at cut ends per the manufacturer's instructions prior to joint assembly.

#### B. Laying Pipe and Fittings:

- 1. Bedding for Ductile Iron Pipe: Minimum bedding requirements shall be Type 2 as defined in ANSI/AWWA C600, latest revision. Provide proper bedding required, in accordance with thickness class of pipe being laid and depth of cover. Proper pipe laying conditions shall be in accordance with ANSI/AWWA C150 and C151, latest revision, and ANSI/AWWA C600, latest revision.

2. All ductile iron pipe and fittings shall be laid in accordance with American Water Works Association Standard ANSI/AWWA C600, latest revision, entitled "Standard for Installation of Ductile Iron Water Mains and Their Appurtenances", with the following sections specifically applying:
  - a. Section 3.3 - Pipe Installation
  - b. Section 3.4 - Joint Assembly

C. Ductile Iron Pipe Joints:

1. Type: The joints of all pipelines shall be made absolutely tight. The particular joint used shall be approved by the Engineer prior to installation. Where shown on the Drawings or where, in the opinion of the Engineer, settlement or vibration is likely to occur, all pipe joints shall be bolted mechanical type or restrained type as specified above, or as indicated on the Drawings.
2. Push-on Joints: Push-on joints shall be made in strict accordance with the the manufacturer's recommendations. Lubricant, if required, shall be an inert, non-toxic, water soluble compound incapable of harboring, supporting, or culturing bacterial life. Manufacturer's installation recommendations shall be submitted to the Engineer for review and approval before commencing work. The bell of the pipe shall be cleaned of excess tar or other obstructions and wiped out before the cleaned and prepared spigot of the next pipe is inserted. The new pipe shall be shoved firmly into place until properly seated and held securely until the joint has been completed.
3. Mechanical Joint: All types of mechanical joint pipes shall be laid and jointed in full conformance with manufacturer's recommendations, which shall be submitted to the Engineer for review and approval before work is begun. Only skilled workmen shall be permitted to makeup mechanical joints. Torque wrenches, set as specified ion AWWA Standard C111, shall be used; or spanner type wrenches not longer than specified therein may be used without the permission of the Engineer.
4. Flanged Joints: Flanged joints shall be made up by inserting the gasket between the flanges. The threads of the bolts and the faces of the gaskets shall be coated with suitable lubricant immediately before installation.
5. Restrained Joints: Restrained joints shall be provided where indicated on the Drawings. Joint assembly shall be made in strict accordance with the manufacturer's instructions, which shall be submitted to the Engineer for review and approval before commencing work.

### 3.04 INSTALLATION OF PVC PIPE

#### A. Storage and Handling:

1. PVC pipe shall be delivered to the site in unbroken bundles packaged in such manner as to provide protection against damage. When possible, pipe should be stored at the job site in the unit packages until ready for use. Packaged units shall be handled using a forklift or a spreader bar with fabric straps. Packaged units shall not be stacked at the job site higher than two units high.
2. When it is necessary to store PVC pipe for long periods of time, exposure to direct sunlight shall be prevented by covering the pipe with an opaque material. Adequate air circulation above and around the pipe shall be provided as required to prevent excessive heat accumulation. PVC pipe shall not be stored close to heat sources of hot objects such as heaters, fires, boiler, or engine exhaust. Pipe gaskets shall be protected from excessive exposure to heat, direct sunlight, ozone, oil and grease. The interior and all sealing surfaces of pipe, fittings, and other appurtenances shall be kept clean and free of dirt and foreign matter.
3. Care shall be taken in handling and laying pipe and fittings to avoid severe impact blows, crushing, abrasion damage, gouging or cutting. Pipe shall be lowered, not dropped, from trucks or into trenches. All cracked, damaged, or defective pipe and fittings, or any length of PVC pipe having a gouge, scratch or other permanent indentation of more than 10 percent of the wall thickness in depth, shall be rejected and removed at once from the work and replaced with new acceptable pipe at no additional cost to the Owner.

#### B. Field Cutting PVC Pipe: Field cutting of pipe shall be done in a neat workmanlike manner without creating damage to the pipe. The pipe shall be cut square with a fine-toothed hand or power saw or other cutter or knife designed for use with plastic pipe. Prior to cutting, the pipe shall be marked around its entire circumference or a square in vise shall be used to ensure the pipe end is cut square. Remove burrs by smoothing edges with a knife, file, or sandpaper.

1. Field Cutting Bell and Spigot PVC Pipe: Bevel the cut end of the pipe using a pipe beveling tool, wood rasp or portable sander to prevent damage to the gasket during joint assembly. A factory finished beveled end should be used as a guide to ensure proper beveling angle and correct depth of bevel. Round off any sharp edges on the leading edge of the bevel with a knife or file.

#### C. Laying PVC Pipe:

1. Pipe Bedding: Bedding for PVC pipe shall be as specified using granular pipe bedding material.

2. All PVC pipe shall be laid in accordance with the pipe manufacturer's published installation guide, the AWWA Manual of Practice No. M23 "PVC Pipe-Design and Installation" and the Uni-Bell Plastic Pipe Association installation recommendations.

D. PVC Pipe Joint Assembly for Rubber Gasketed Bell and Spigot Pipe:

1. The PVC bell and spigot joint shall be assembled in accordance with the pipe manufacturer's installation instructions. Clean the interior of the bell, the gasket, and the spigot of the pipe to be jointed with a rag to remove any dirt or foreign material before assembling. Inspect the gasket, pipe spigot bevel, gasket groove and sealing surfaces for damage or deformation.
2. Lubricate the spigot end of the pipe with a lubricant supplied or specified by the pipe manufacturer for use with gasketed PVC pipe in potable water systems. The lubricant should be supplied as specified by the pipe manufacturer. After then spigot end is lubricated, it must be kept clean and free of dirt and sand. If dirt and sand adhere to the lubricated end, the spigot must be wiped clean and relubricated.
3. Insert the spigot into the bell so that it contacts the gasket uniformly. Align the pipe sections and push the spigot end into the bell until the manufacturer's reference mark on the spigot is flush with the end of the bell. The pipe should be pushed into the bell using a bar and wood block. The joint shall not be assembled by "stabbing" or swinging the pipe into the bell, nor shall construction machinery be used to push the pipe into the bell.
4. If undue resistance to insertion of the spigot end is encountered or if the reference mark does not reach the flush position, disassemble the joint and check the position of the gasket. If the gasket is twisted or pushed out of its seat, inspect the components, repair or replace damaged items, clean the components and repeat the assembly steps. Be sure the pipe is in proper alignment during assembly. If the gasket was not out of position, check the distance between the spigot end and the reference mark and relocate the mark if it is out of position.

E. PVC Pipe Joint Assembly for Threaded and Solvent Welded Pipe

1. All threaded and solvent welded joints shall be made watertight. All pipe cutting, threading and jointing procedures for threaded and solvent welded PVC pipe joints shall be in strict accordance with the pipe and fitting manufacturer's printed installation instructions. Thread lubricant for threaded joints shall be Teflon tape only.
2. At threaded joints between PVC and metal pipes, the metal side shall contain the socket end and the PVC side the spigot. A metal spigot shall not, under any circumstances, be screwed into a PVC socket.

- F. PVC forcemains underground shall be strapped every 10 feet or spiral wrapped with an insulated green No. 14 gauge copper ground wire for future location. The wire shall be stubbed out at each valve box or manhole.

### 3.05 FITTING INSTALLATION FOR UNDERGROUND PIPING

- A. The weight of ductile iron fittings shall not be carried by the pipe on which they are installed. The fitting shall be supported by a concrete cradle as shown on the standard details. Concrete used for supports shall have a minimum compressive strength of 3000 psi at 28 days. Concrete for support cradle shall be poured against undisturbed soil.
- B. All glands, clamps, bolts, nuts, studs and other uncoated parts of fitting joints for underground installation shall be coated with two coats, 10 mils DFT per coat, of coal tar epoxy equal to Kop-Coat Bitumastic No. 300-M.

### 3.06 CONCRETE PIPE ENCASEMENT

- A. Concrete for concrete pipe encasement shall have a minimum strength of 3000 psi at 28 days and encasement shall be constructed in accordance with details shown on the Drawings. Encasement shall be constructed where:
  - 1. Indicated on the Drawings
  - 2. The Engineer shall order the pipeline encased.
- B. The points of beginning and ending of concrete pipe encasement shall be not more than 6 inches from a pipe joint to protect the pipe from cracking due to uneven settlement of its foundation or the effects of superimposed live loads. Pipe shall be wrapped in visqueen.
- C. Pipe encasement shall provide a minimum coverage of 6 inches all around the pipe including pipe bells.

### 3.07 INSTALLATION OF PIPE SLEEVES, WALL CASTINGS AND COUPLINGS

- A. Pipe sleeves and wall castings shall be provided at the locations called for on the Drawings. These units shall be as detailed and of the material as noted on the Drawings. They shall be accurately set in the concrete or masonry to the elevations shown. All wall sleeves and castings required in the walls shall be in place when the walls are poured. Ends of all wall castings and wall sleeves shall be of a type consistent with the piping to be connected to them.
- B. Link seals for wall sleeves shall be installed in strict accordance with the manufacturer's printed installation instructions. For watertight applications in tanks or treatment units, the link seal installation shall be tested hydrostatically for leaks at

the same time as the tank or treatment unit. Any leaks that occur during the test period shall be repaired by checking the link seals for proper installation and replacement of unit(s) found to be defective at no additional cost to the Owner.

- C. Pipe couplings shall be installed in strict accordance with the manufacturer's published instructions and recommendations.

### 3.08 INSTALLATION OF VALVES

- A. Valves of the size and type shown on the Drawings shall be set plumb and installed at the locations indicated on the Drawings. Valves shall be installed in accordance with manufacturer's installation instructions and with the Details shown on the Drawings.
- B. Valves shall be installed such that they are supported properly in their respective positions, free from distortion and strain. Valves shall be installed such that their weight is not borne by pumps and equipment that are not designed to support the weight of the valve.
- C. Valves shall be carefully inspected during installation; they shall be opened wide and then tightly closed and the various nuts and bolts shall be tested for tightness. Special care shall be taken to prevent any foreign matter from becoming lodged in the valve seat. Check and adjust all valves for smooth operation.
- D. Install valves with the operating stem in either horizontal or vertical position.
- E. Allow sufficient clearance around the valve operator for proper operation.
- F. Clean iron flanges by wire brushing before installing flanged valves. Clean carbon steel flange bolts and nuts by wire brushing, lubricate threads with oil or graphite, and tighten nuts uniformly and progressively. Clean threaded joints by wire brushing or swabbing. Apply Teflon joint compound or Teflon tape to pipe threads before installing threaded valves. Joints shall be watertight.
- G. For buried valves, a valve box shall be centered accurately over the operating nut and the entire assembly shall be plumb. The tops of valve boxes shall be adjusted to the proper elevation as specified below and as shown on the Drawings.
  - 1. In paved areas, tops of valve box covers shall be set flush with pavement. Following paving operations, a 16 inch square shall be neatly cut in the pavement around the box and the paving removed. The top of the box shall then be adjusted to the proper elevation and a 30 inch square by 6 inch thick concrete pad poured around the box cover. Concrete pads in traffic areas shall be reinforced with No. 4 reinforcement bars as shown on the Drawings. Concrete for the pad shall be 3000 psi compressive strength.
  - 2. In unpaved areas, tops of valve box covers shall be set 2 inches above finished grade. After the top of the box is set to the proper elevation, a 16

inch square by 6 inch thick concrete pad shall be poured around the box cover. Concrete for the pad shall be 3000 psi compressive strength.

- H. Valves shall be tested hydrostatically, concurrently with the pipeline in which they are installed. Protect or isolate any parts of valves, operators, or control and instrumentation system whose pressure rating is less than the pressure test(s). If valve joints leak during pressure testing, loosen or remove the nuts and bolts, reseal or replace the gasket, reinstall or retighten the bolts and nuts and hydrostatically retest the joints.
- I. Following installation, all aboveground valves shall be painted in accordance with the painting system specified in accordance with manufacturer's recommendations. Following installation of buried valves or valves installed in valve vaults, repair any scratches, marks and other types of surface damage, etc., with a coating equal to the original coating supplied by the manufacturer. Prior to backfilling, all nuts, bolts and other parts of the valve joints shall be coated with two coats, 10 mils DFT per coat, of coal tar epoxy equal to Kop-Coat Bitumastic No. 300-M.

### 3.09 SEPARATION OF NON-POTABLE WATER MAINS AND POTABLE WATER MAINS

- A. Reclaimed water mains shall be installed with at least a 3 foot horizontal separation from any potable water main. Force mains and gravity sewers shall have a 6 foot separation from potable mains. At crossings the installation shall provide of a minimum vertical separation distance of 12 inches between the outside of the crossing non-potable and potable water mains. This separation shall be provided where the potable water main is either below or above the non-potable water main. When the 12 inch minimum vertical separation distance cannot be maintained, the potable water main shall be encased in concrete. Concrete encasement shall be as specified above. The potable water main shall be encased for 10 feet each way of the crossing.

### 3.10 MAIN CLEANING AND FLUSHING

- A. Following the hydrostatic and leakage tests, all the mains constructed under this contract shall be cleaned and flushed to remove sand, loose dirt and other debris. Flushing velocity shall be a minimum of 2.5 fps. Flushing shall continue until clean water flows from the main. However, the Contractor shall endeavor to use the minimum amount of flushing water required to complete the work. To increase the efficiency of the cleaning and flushing operation, the Contractor shall use a pipeline pigging device of the proper size and designed to clean the intended pipeline. The pigging device shall be capable of turning through a standard 90 degree MJ bend. The type of pipeline pigging device and the method of operation shall be approved by the Engineer.
- B. Upon completion of testing for the gravity drain line system, drain lines shall be flushed to remove dirt, sand, stones and other debris which may have entered the lines during construction and settled out in the lines and manholes. Materials and

debris flushed from the drain lines shall be removed from a downstream manhole or basin and disposed of at an approved disposal area.

- C. Water for flushing shall be clean water provided by the Contractor from a source approved by the Engineer and the owner prior to beginning connections for flushing operations. Flushing shall only be completed upon approval by the Owner.
- D. Temporary blow offs may be required for the purpose of flushing mains. Temporary blow offs shall be installed as close as possible to the ends of the main being flushed. Blow offs installed on the main shall be the same diameter as the main. Temporary blow offs shall be removed and plugged after the main is flushed. All costs for installing and removing temporary blow offs shall be at an additional cost to the Owner.
- E. The Owner shall be notified at least 3 working days prior to flushing mains.
- F. Blow offs and temporary drainage piping used for flushing shall not be discharged into any gravity sewer or pumping station wetwell. The Contractor shall obtain prior approvals from the Engineer and the Owner as to the methods and locations of flushing water discharge.

### 3.11 INSTALLATION OF TIE RODS

- A. Tie rods shall be installed in strict accordance with the manufacturer's written installation requirements. Unless otherwise indicated on the Drawings, the size and number of tie rods for a joint or installation shall be as recommended by the manufacturer's design chart for a working pressure of 150 psi.
- B. Following installation and prior to backfilling, all parts of the tie rod joint restraint system, including tie rods, tie bolts, nuts, washers, and other fasteners, shall be coated with two coats, 10 mils DFT per coat, of coal tar epoxy equal to Kop-Coat Bitumastic No. 300-M.

### 3.12 INSTALLATION OF REDUCED PRESSURE BACKFLOW PREVENTERS

- A. Backflow preventers shall be installed at the locations shown on the Drawings. Backflow preventers shall be installed in accordance with the manufacturer's written installation instructions and as shown on the Drawings.
- B. Reduced pressure principle backflow preventers shall be installed horizontally with an 18 inch minimum clearance between the finished grade and the lowest point on the bottom of the unit. Reduced pressure backflow preventers shall be installed with provisions for a suitable drain arrangement to drain off discharges from the relief valve, so that discharges are not objectionable. Backflow preventers shall be installed such that they are easily accessible for testing, maintenance and repair.

- C. Piping and fittings for units 3 inches and larger in size shall have flanged joints. Piping, fittings and valves shall be properly supported with pipe support stands as shown on the Drawings.
- D. Following installation of the reduced pressure backflow preventer, piping, fittings and valves, the entire aboveground assembly shall be finished painted in accordance with manufacturer's recommendations.

END OF SECTION