



## **Invitation for Bids**

**IFB-106-23-JJ**

**STIRLING ROAD 8-INCH WATER MAIN EXTENSION  
Project Number 5146**

**FOR THE  
CITY OF HOLLYWOOD, FLORIDA (CITY)**

**IFB Issue Date:** July 18, 2023  
**Questions Due Date:** August 9, 2023  
**Submittal Due Date:** August 16, 2023, at 3 p.m. ET

**CITY OF HOLLYWOOD**  
**IFB-106-23-JJ**  
**STIRLING ROAD 8-INCH WATER MAIN EXTENSION**  
**Project Number 5146**

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## SECTION I – INTRODUCTION

### 1.1 **Purpose**

The City of Hollywood, Florida (City) is seeking bids from qualified and experienced firms, hereinafter referred to as the Contractor or Bidder, to provide construction services for the City, in accordance with the terms, conditions, and specifications contained in this solicitation. Responses to this solicitation are due by **August 16, 2023, by 3:00 PM EST**, and will be opened in a virtual public setting on **August 16, 2023, at 3:00 PM EST** at **opengove.com**.

Submittals shall be received electronically through OpenGov.

Submittals shall be considered an offer on the part of the bidder/proposer, which offer shall be deemed accepted upon approval of the City, and in case of default, the City reserves the right to accept or reject any or all bids/proposals, to waive irregularities and technicalities, and request new bids/proposals. The City also reserves the right to award any resulting agreement as it deems will best serve the interests of the city.

### 1.2 **Pre-bid Conference and/or Site Visit (Mandatory)**

There will be a mandatory pre-bid conference and/or site visit scheduled for this solicitation. Attendance is required if the event is mandatory, and in the event that it is non-mandatory, it is strongly suggested that all Contractors attend the pre-bid conference and/or site visit to receive information that may be critical to their understanding of this solicitation.

The mandatory pre-bid conference will be held on:

**July 26, 2023, at 2:00 pm**  
**Southern Regional Wastewater Treatment Plant**  
**1621 N. 14<sup>th</sup> Avenue**  
**Hollywood, Florida 33021**  
**First Floor Conference Room**

### 1.3 **OpenGov**

The City of Hollywood uses OpenGov (<https://procurement.opengov.com/portal/hollywoodfl>) to administer the competitive solicitation process, including but not limited to soliciting bids, issuing addenda, posting results and issuing notification of an intended decision.

The City shall not be responsible for a Bidders inability to submit a bid by the bid end date and time for any reason, including issues arising from the use of OpenGov.

### 1.4 **Point of Contact**

For information concerning procedures for responding to this solicitation, contact the Point of Contact within the Office of Procurement Services, Jean Joinville Senior Purchasing Agent at [jjoinville@hollywoodfl.org](mailto:jjoinville@hollywoodfl.org) or by phone at (954) 921-3224, or Staci Alli, Office Assistant I at [salli@hollywoodfl.org](mailto:salli@hollywoodfl.org) or by phone at 954-921-3222. Such contact is to be for clarification purposes only. All questions must be submitted in writing via OpenGov by **August 9, 2023, by 3:00 PM EST** in order to receive a response.

Project Manager: Giselle Hipolito, Department of Public Utilities, email: [ghipolito@hollywoodfl.org](mailto:ghipolito@hollywoodfl.org) or by phone: (954) 921-3930.

For information concerning technical specifications, please utilize the question / answer feature provided by OpenGov at <https://procurement.opengov.com/portal/hollywoodfl>. Questions of a material nature must be received prior to the cut-off date specified in the solicitation schedule. Material changes, if any, to the scope of services or bidding procedures will only be transmitted by written addendum. (See addendum section of OpenGov Site). Bidders please note: No part of your bid can be submitted via FAX. No variation in price or conditions shall be permitted based upon a claim of ignorance. Submission of a bid will be considered evidence that the Bidder has familiarized themselves with the nature and extent of the work, and the equipment, materials, and labor required. The entire bid response must be submitted in accordance with all specifications contained in this solicitation. The questions and answers submitted in OpenGov shall become part of any contract that is created from this solicitation.

It is the sole responsibility of the Bidder to ensure that their bid is submitted electronically through OpenGov at <https://procurement.opengov.com/portal/hollywoodfl>.

## **1.5 Cone of Silence**

The City of Hollywood City Commission adopted Ordinance No. O-2007-05, which created Section 30.15(F) imposing a Cone of Silence for certain City purchases of goods and Services.

The Cone of Silence refers to limits on communications held between vendors and vendor's representatives and City elected officials, management and staff during the period in which a Formal Solicitation is open.

The Ordinance does allow potential vendors or vendor's representatives to communicate with designated employees for the limited purpose of seeking clarification or additional information. The names and contact information of those employees that may be contacted for clarification or additional information are included in the solicitation.

The Cone of Silence does not prohibit a vendor or vendor's representative from communicating verbally, or in writing with the City Manager, the City Manager's designee, the City Attorney or the City Attorney's designee on those procurement items to be considered by the City Commission.

The Cone of Silence does not prohibit a vendor or vendor's representative from making public presentations at a duly noticed pre-bid conference or duly noticed evaluation committee meeting or from communicating with the City Commission during a duly noticed public meeting.

The Cone of Silence shall be imposed when a formal competitive solicitation has been issued and shall remain in effect until an award is made, a contract is approved, or the City Commission takes any other action which ends the solicitation.

To view the Cone of Silence, go to the City of Hollywood Code of Ordinance online, and view [Section 30.15F](#).

All communications regarding this bid should be sent in writing to the Procurement Services Division as identified in this bid.

*END OF SECTION*



## **SECTION II - SPECIAL TERMS AND CONDITIONS**

### **2.1 Addenda, Changes, and Interpretations**

It is the sole responsibility of each firm to notify the Point of Contact utilizing the question / answer feature provided by OpenGov and request modification or clarification of any ambiguity, conflict, discrepancy, omission or other error discovered in this competitive solicitation. Requests for clarification, modification, interpretation, or changes must be received prior to the Question and Answer (Q & A) Deadline. Requests received after this date may not be addressed. Questions and requests for information that would not materially affect the scope of services to be performed or the solicitation process will be answered within the question / answer feature provided by OpenGov and shall be for clarification purposes only. Material changes, if any, to the scope of services or the solicitation process will only be transmitted by official written addendum issued by the City and uploaded to OpenGov as a separate addendum to the solicitation. Under no circumstances shall an oral explanation given by any City official, officer, staff, or agent be binding upon the City and should be disregarded. All addenda are a part of the competitive solicitation documents and each firm will be bound by such addenda. It is the responsibility of each to read and comprehend all addenda issued.

### **2.2 Dimensions, Quantities and Subsurface Information**

Dimensions, quantities, and subsurface information supplied by the City are in no way warranted to indicate true amounts or conditions. Bidders/Contractors shall neither plead misunderstanding or deception nor make claims against the City if the actual amounts, conditions, or dimensions do not conform to those stated. Any "Outside" reports made available by the Engineer are neither guaranteed as to accuracy or completeness, nor a part of the Contract Documents.

### **2.3 Trench Safety Form**

The Trench Safety Form included in the Bid Documents must be completed and signed. Noncompliance with this requirement may invalidate the bid.

### **2.4 Changes and Alterations**

Bidder may change or withdraw a Bid at any time prior to Bid submission deadline; however, no oral modifications will be allowed. Modifications shall not be allowed following the Bid deadline.

### **2.5 Bidder's Costs**

The City shall not be liable for any costs incurred by Bidders in responding to this solicitation.

### **2.6 Pricing/Delivery**

All pricing must include delivery and installation and be quoted FOB: Destination, unless specified otherwise in Section III.

### **2.7 Price Validity**

Prices provided in this solicitation shall be valid for at least One-Hundred and Twenty (120) days from time of solicitation opening unless otherwise extended and agreed upon by the City and Bidder.

### **2.8 No Exclusive Contract**

Bidder agrees and understands that the contract shall not be construed as an exclusive arrangement and further agrees that the City may, at any time, secure similar or identical services from another vendor at the City's sole option.

### **2.9 Responsive**

In order to be considered responsive to the solicitation, the firm's bid shall fully conform in all material respects to the solicitation and all of its requirements, including all form and substance.

## **2.10 Responsible**

In order to be considered as a responsible firm, firm shall be fully capable to meet all of the requirements of the solicitation and subsequent contract, must possess the full capability, including financial and technical, to perform as contractually required, and must be able to fully document the ability to provide good faith performance.

## **2.11 Minimum Qualifications**

To be eligible for award of a contract in response to this solicitation, the Bidder must demonstrate that they have successfully completed services, as specified in Section III of this solicitation, are normally and routinely engaged in performing such services, and are properly and legally licensed (if required) to perform such work. Bidder must possess, and be able to provide the City with any and all required Federal, State, County and/or municipal licenses, and occupational licenses. Bidder must be able to provide proof of valid licensing for all subcontractors and/or material suppliers hired by the contractor, if requested. In addition, the Bidder must have no conflict of interest with regard to any other work performed by the Bidder for the City.

## **2.12 Award of Contract**

Award may be in the aggregate, or by line item, or by group, whichever is determined to be in the best interest of the City.

The Contract will be awarded only to a Bidder, who in the opinion of the **Engineer**, is fully qualified to undertake the work, quoting the lowest price, for that product/service that will best serve the needs of the City. The City reserves the right before awarding the Contract to require a Bidder to submit such evidence of his qualifications as it may deem necessary and may consider any available evidence of his financial status, technical qualifications, and other qualifications and abilities.

The City also reserves the right to accept or reject any or all bids, part of bids, and to waive minor irregularities or variations to specifications contained in bids, and minor irregularities in the bidding process. The City also reserves the right to award the contract on a split order basis, lump sum basis, individual item basis, or such combination as shall best serve the interest of the City.

The City, in all solicitations or advertisements for purchasing of goods, supplies, materials, equipment and services, will receive consideration from qualified businesses without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

## **2.13 Execution Of Contract**

The Bidder to whom the Contract is awarded shall, within ten days of the date of award, execute and deliver three (3) copies of the following to the Engineer.

- A. The Contract
- B. Performance and Payment Bond
- C. Evidence of required Insurance
- D. Proof of authority to execute the Contract
- E. Proof of authority to execute the Bond on behalf of the Awardee
- F. List of Subcontractors, estimated Contract Value for each and proof that such subcontractors possess all required Federal, State, County and/or municipality licenses, including but not limited to certified of competency and occupational license

The above documents must be furnished, executed and delivered before the Contract will be executed by

the City. The Contract shall not be binding upon the City until it has been executed by the City and a copy of such fully executed Contract is delivered to the Contractor.

**2.14 Failure To Execute Contract, Bid Guaranty Forfeited**

Should the Bidder to whom the Contract has been awarded refuse or fail to complete the requirements of Section 2.13 above within ten (10) days after Notice of Award, the additional time in days (including weekends) required to CORRECTLY complete the documents will be deducted, in equal amount, from the Contract Time, or the City may elect to revoke the Award. The Bid Guaranty of any Bidder failing to execute the awarded Contract shall be retained by the City and the Contract awarded as the Commission desires.

**2.15 Manufacturer/Brand/Model Specific Request**

This is a manufacturer/brand/model specification. No substitutions will be allowed unless specified in Form 3 or Attachment D, – Technical Specifications.

**2.16 Permits and Fees** Refer to Attachment D – Technical Specifications (Section 01025 Basis of Payment)

**2.17 Contract Security**

When the awarded bidder delivers the executed contract to the City, it must be accompanied by the required bonds.

**2.18 Contract Period**

The initial contract term shall commence upon date of award by the City for a sixty (60) day term.

In the event services are scheduled to end because of the expiration of this contract, the Contractor shall continue the service upon the request of the City as authorized by the awarding authority. The extension period shall not extend for more than 120 days beyond the expiration date of the existing contract. The Contractor shall be compensated for the service at the rate in effect when this extension clause is invoked by the City.

**2.19 Bid Guaranty**

A Bid Guaranty in the form of a Cashier's Check, Certified Check or Bid Bond executed by the Bidder and a qualified Surety in the amount of 5% of the Bid is required for this project.

**2.20 Warranties of Usage**

Any estimated quantities listed are for information and tabulation purposes only. No warranty or guarantee of quantities needed is given or implied. It is understood that the Contractor will furnish the City's needs as they arise.

**2.21 Rules and Submittals of Bids**

The signer of the bid must declare that the only person(s), company or parties interested in the proposal as principals are named therein; that the bid is made without collusion with any other person(s), company or parties submitting a bid; that it is in all respects fair and in good faith, without collusion or fraud; and that the signer of the bid has full authority to bind the principal bidder.

**2.22 Tie Breaker**

In cases where there is a tie for the bid award, the award shall be made by giving preference to the low bidder(s) with the following items (in this order): (1) maintenance of a drug-free workplace in accordance with the requirements of Florida Statutes Section 287.087, (2) local Hollywood vendor preference, (3)

closest proximity/location to project site or City Hall, and/or (4) minority-owned or disadvantaged business status. If a tie still exists after the aforementioned tiebreakers are utilized, the Chief Procurement Officer will make a recommendation for award among the tied bidders.

## **2.23 Conflict of Interests Prohibited**

Any respondent submitting a response to this solicitation is responsible for being aware of, and complying with [Section 34.02](#) of the City Code of Ordinances. If you have questions concerning whether you may or may not need to comply with the ordinance, please contact the City of Hollywood, City Clerk's Office at 954-921-3211.

## **2.24 Protest Procedure**

Any respondent who is not recommended for award of a contract and who alleges a failure by the City to follow the City's [Procurement Code](#) or any applicable law may protest to the CPO, by delivering a letter of protest to the CPO in accordance with [Section 38.52](#) of the City's [Procurement Code](#) within five days after a notice of intent to award is posted on the City's web site, OPENGOV, City Clerk's Office, Open Government, and/or City's Sunshine Board (<https://www.hollywoodfl.org/Archive.aspx?AMID=140>).

## **2.25 Insurance Requirements**

Contractor shall maintain, at its sole expense, during the term of this agreement the following insurances:

1. BUILDERS RISK (BR 1) - Installation Floater: (Not Applicable)

2. GENERAL LIABILITY (GL3):

Prior to the commencement of work governed by this contract, the Contractor shall obtain General Liability Insurance. Coverage shall be maintained throughout the life of the contract and include, as a minimum:

Premises Operations  
Products and Completed Operations  
Blanket Contractual Liability  
Personal Injury Liability  
Expanded Definition of Property Damage

The minimum limits acceptable shall be:

\$2,000,000 Combined Single Limit (CSL)

If split limits are provided, the minimum limits acceptable shall be:

\$1,000,000 per Person  
\$2,000,000 per Occurrence  
\$100,000 Property Damage

An Occurrence Form policy is preferred. If coverage is provided on a Claims Made policy, its provisions should include coverage for claims filed on or after the effective date of this contract. In addition, the period for which claims may be reported should extend for a minimum of twelve (12) months following the acceptance of work by the City.

The City of Hollywood shall be named as Additional Insured on all policies issued to satisfy the above requirements.

### 3.GENERAL LIABILITY (GLXCU):

Recognizing that the work governed by this contract involves either underground exposures, explosive activities, or the possibility of collapse of a structure, the Contractor's General Liability Policy shall include coverage for the XCU (explosion, collapse, and underground) exposures with limits of liability equal to those of the General Liability Insurance policy.

### 4.VEHICLE LIABILITY (VL3):

Recognizing that the work governed by this contract requires the use of vehicles, the Contractor, prior to the commencement of work, shall obtain Vehicle Liability Insurance. Coverage shall be maintained throughout the life of the contract and include, as a minimum, liability coverage for:

Owned, Non-Owned, and Hired Vehicles

The minimum limits acceptable shall be:

\$1,000,000 Combined Single Limit (CSL)

If split limits are provided, the minimum limits acceptable shall be:

\$500,000 per Person

\$1,000,000 per Occurrence

\$100,000 Property Damage

The City of Hollywood shall be named as Additional Insured on all policies issued to satisfy the above requirements.

### 5.WORKERS' COMPENSATION (WC2):

Prior to the commencement of work governed by this contract, the Contractor shall obtain Workers' Compensation Insurance with limits sufficient to respond to the applicable state statutes.

In addition, the Contractor shall obtain Employers' Liability Insurance with limits of not less than:

\$500,000 Bodily Injury by Accident

\$500,000 Bodily Injury by Disease, policy limits

\$500,000 Bodily Injury by Disease, each employee

Coverage shall be maintained throughout the entire term of the contract.

### 6.POLLUTION LIABILITY INSURANCE

The minimum limits of liability shall be:

\$1,000,000 per each claim / \$2,000,000 aggregate

Coverage shall be provided by a company or companies authorized to transact business in the state of Florida and the company or companies must maintain a minimum rating of "A" and Class X, as assigned by the A.M. Best Company.

The policy must be endorsed to provide the City with (30) days' notice of cancellation.

If the Contractor has been approved by the Florida's Department of Labor, as an authorized self-insurer, the City shall recognize and honor the Contractor's status. The Contractor may be required to submit a Letter of Authorization issued by the Department of Labor and a Certificate of Insurance, providing details on the Contractor's Excess Insurance Program.

If the Contractor participates in a self-insurance fund, a Certificate of Insurance will be required. In addition, the Contractor may be required to submit updated financial statements from the fund upon request from the City.

Any sub-consultant shall supply such similar insurance required of the Consultant. Such certificates shall name the City as additional insured in the general liability and auto liability policies.

**2.26 Uncontrollable Circumstances (Force Majeure)**

The City and Contractor will be excused from the performance of their respective obligations under this agreement when and to the extent that their performance is delayed or prevented by any circumstances beyond their control including, fire, flood, explosion, strikes or other labor disputes, acts of God or public emergency, war, riot, civil commotion, malicious damage, act or omission of any governmental authority, delay or failure or shortage of any type of transportation, equipment, or service from a public utility needed for their performance, provided that:

**2.26.1** The non performing party gives the other party prompt written notice describing the particulars of the Force Majeure including, but not limited to, the nature of the occurrence and its expected duration, and continues to furnish timely reports with respect thereto during the period of the Force Majeure;

**2.26.2** The excuse of performance is of no greater scope and of no longer duration than is required by the Force Majeure; and

**2.26.3** No obligations of either party that arose before the Force Majeure causing the excuse of performance are excused as a result of the Force Majeure; and

**2.26.4** The non-performing party uses its best efforts to remedy its inability to perform. Notwithstanding the above, performance shall not be excused under this Section for a period in excess of two (2) months, provided that in extenuating circumstances, the City may excuse performance for a longer term. Economic hardship of the Contractor will not constitute Force Majeure. The term of the agreement shall be extended by a period equal to that during which either party's performance is suspended under this Section.

**2.27 Supplier Portal (Oracle) Payment Method**

The City has implemented software that contains a supplier portal allowing suppliers to submit and update their information via the supplier portal. New suppliers will be required to register; and current suppliers will need to confirm and update their information.

Firms are responsible for ensuring that all contact, payment, and general information is updated at all times, and will not hold the City liable for any inaccurate information.

**2.28 Debarred or Suspended Bidders or Proposers**

Firm(s) certifies, by submission of a response to this solicitation, that neither it nor its principals and subcontractors are presently debarred or suspended by any federal, state, county or municipal department or agency.

## **2.29 Payment and Performance Bond**

A Performance Bond and a Payment Bond each equal to 100 percent of the total Bid will be required of the Awardee. The Bond must be written through a company licensed to do business in the State of Florida and be rated at least "A", Class X, in the latest edition of "Best's Key Rating Guide", published by A.M. Best Company. As per Florida Statute Section 255.05, the Contractor shall be required to record the payment and performance bonds in the public records of Broward County

## **2.30 Public Records**

### **A. Public Records/Trade Secrets/Copyright:**

**All responses will become the property of the City. The Consultant's response to the solicitation is a public record pursuant to Florida law and is subject to disclosure by the City pursuant to Chapter 119.07, Florida Statutes ("Public Records law"). The City shall permit public access to all documents, papers, letters or other material submitted in connection with this solicitation and the Contract to be executed for this solicitation, subject to the provisions of Chapter 119, Florida Statutes.**

Any language contained in the Consultant's response to the solicitation purporting to require confidentiality of any portion of the Consultant's response to the solicitation, except to the extent that certain information is in the City's opinion a Trade Secret pursuant to Florida law, shall be void. If a Consultant submits any documents or other information to the City that the Consultant claims is Trade Secret information and exempt from Florida Statutes Chapter 119.07 ("Public Records Laws"), the Consultant shall clearly designate that it is a Trade Secret and that it is asserting that the document or information is exempt. The Consultant must specifically identify the exemption being claimed under Florida Statutes 119.07. The City shall be the final arbiter of whether any information contained in the Consultant's response to the solicitation constitutes a Trade Secret. The City's determination of whether an exemption applies shall be final, and the Consultant agrees to defend, indemnify, and hold harmless the City and the City's officers, employees, and agent, against any loss or damages incurred by any person or entity as a result of the City's treatment of records as public records. In the event of Contract award, all documentation produced as part of the Contract shall become the exclusive property of the City. Proposals purporting to be subject to copyright protection in full or in part will be rejected.

EXCEPT FOR CLEARLY MARKED PORTIONS THAT ARE BONA FIDE TRADE SECRETS PURSUANT TO FLORIDA LAW, DO NOT MARK YOUR RESPONSE TO THE SOLICITATION AS PROPRIETARY OR CONFIDENTIAL. DO NOT MARK YOUR RESPONSE TO THE SOLICITATION OR ANY PART THEREOF AS COPYRIGHTED.

### **B. PUBLIC RECORDS GENERAL**

**IF THE CONSULTANT HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONSULTANT'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT: (954-921-3211), [pcerny@hollywoodfl.org](mailto:pcerny@hollywoodfl.org), CITY CLERK'S OFFICE, 2600 HOLLYWOOD BLVD, HOLLYWOOD, FLORIDA 33020)**

Consultant shall:

1. Keep and maintain public records that ordinarily and necessarily would be required by the City in order to perform the service.

2. Upon request from the City's custodian of public records, provide the City 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 Chapter 119, Florida Statutes.
3. 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 this contract if the Consultant does not transfer the records to the City.
4. Upon completion of the Contract, transfer, at no cost, to the City all public records in possession of the Consultant or keep and maintain public records required by the City to perform the service. If the Consultant transfers all public records to the City upon completion of this Contract, the Consultant shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Consultant keeps and maintains public records upon completion of this Contract, the Consultant 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. It is solely and exclusively the Contractor's responsibility to familiarize itself with Chapter 119, Florida Statutes, and to ensure compliance with its requirements.

*END OF SECTION*



## **SECTION III - SCOPE OF SERVICES**

### **3.1 Project Description**

Work under this Contract consists of construction of the extension of 8-inch water main along Stirling Road from N. 56<sup>th</sup> avenue, east approximately 800 feet. The work will be on a state road (FDOT) and will also include maintenance of traffic, permitting, and full restoration as required by FDOT.

The Contractor agrees to cooperate and work with FDOT and other project stakeholders.

### **3.2 Technical Specifications**

Refer to Appendix D.

### **3.3 Contractor Qualifications**

The contract will be awarded only to a responsive contractor qualified by experience to do the Work specified. The bidder shall submit, prior to award of contract, satisfactory evidence of his experience in like Work and that he is fully prepared with the necessary organization, capital, equipment and machinery to complete the Work to the satisfaction of the City within the time limit stated. In addition to the above, the Contractor shall satisfy the following criteria:

**A. Construction of at least 3 water main projects on a FDOT roadway.**

**B. Construction of at least 3 water main projects with a total length of at least 1000 feet.**

Form 15 – Information Required from Bidders, shall be completed fully and accurately by the Contractor and submitted with the bid. The information included on the questionnaire will be used in evaluating the qualifications of the Contractor. The City reserves the right to request additional information not identified on the questionnaire.

### **3.4 Subcontractors**

For the City to be assured that only competent and qualified subcontractors will be employed on this project, each Bidder shall submit in the bid a list of the subcontractors performing work on this project. This subcontractors list shall include each firm's name, address, telephone number, contact person and work to be performed. Subcontractors shall be properly registered or licensed with the State of Florida, Broward County and the City of Hollywood. Subcontractors shall, in the City's opinion, be qualified both technically and financially to perform the work.

The City reserves the right to reject any subcontractor who is deemed by the City to be unacceptable technically or financially, or has previously performed work which the City believes to be unsatisfactory. No change may be made to this list of subcontractors by the Contractor, before or after contract award, without the express written consent of the City.

If, prior to award, the City rejects any subcontractor, the Contractor shall be afforded the opportunity to submit qualifications for an alternate subcontractor with no attendant increase in the base lump sum bid amount, adjustment of contract time or alteration of the bid documents. Such qualifications will be due within ten (10) days of receipt of notification of subcontractor rejection. Failure to submit an acceptable alternate subcontractor may result in rejection of the bid. In this event, the bid bond shall be returned to Contractor without claim by the City and with forfeiture of all claim rights by the Contractor.

### **3.5 Deliverables and Objectives**

Refer to Attachment B General Conditions, Attachment C Supplementary General Conditions, Attachment D Technical Specifications and Attachment E Drawings.

**3.6 Project Schedule / Timeline**

Refer to Appendix C, Supplementary conditions, Section 1, Project Schedule.

**3.7 Questions**

Refer to Form 15, Information Required from Bidders.

**3.8 Substantial Completion**

Refer to Appendix C, Supplementary conditions, Section 1, Project Schedule.

*END OF SECTION*

## **SECTION IV – GENERAL TERMS AND CONDITIONS**

### **1.1 INTENT**

It is the policy of the City to encourage full and open competition among all available qualified vendors. All vendors regularly engaged in the type of Work specified in the Bid Solicitation are encouraged to submit bids. To receive notification and to be eligible to bid vendor should be registered with OpenGov. Vendors may register with the OpenGov (registration is free) to be included on a mailing list for selected categories of goods and Services. In order to be processed for payment, any awarded vendor must register with the City by completing and returning a Vendor Application and all supporting documents. For information and to apply as a vendor, please visit our website at [hollywoodfl.org](http://hollywoodfl.org) to download an application and submit it to Procurement Services Division.

It is the intent of the City of Hollywood, FL ("the City"), through this solicitation and the contract conditions contained herein, to establish to the greatest possible extent complete clarity regarding the requirements of both parties to the agreement resulting from this solicitation.

Before submitting a bid, the Vendor shall be thoroughly familiarized with all contract conditions referred to in this document and any addenda issued before the bid/proposal submission date. Such addenda shall form a part of the SOLICITATION and shall be made a part of the contract. It shall be the Vendor's responsibility to ascertain that the bid/proposal includes all addenda issued prior to the bid/proposal submission date. Addenda will be posted on the City's internet site along with the SOLICITATION.

The terms of the SOLICITATION and the selected Vendor's bid and any additional documentation (e.g. questions and answers) provided by the Vendor during the solicitation process will be integrated into the final contract for services entered into between the City and the selected Vendor. The Vendor shall determine, by personal examination and by such other means as may be preferred, the conditions and requirements under which the agreement must be performed.

### **1.2 PROPOSER'S RESPONSIBILITIES**

Proposers are required to submit their bids upon the following express conditions:

- A. Proposers shall thoroughly examine the drawings, specifications, schedules, instructions and all other contract documents.
- B. Proposers shall make all investigations necessary to thoroughly inform themselves regarding delivery of material, equipment or services as required by the SOLICITATION conditions. No plea of ignorance, by the proposer, of conditions that exist or that may hereafter exist as a result of failure or omission on the part of the proposer to make the necessary examinations and investigations, or failure to fulfill in every detail the requirements of the contract documents, will be accepted as a basis for varying the requirements of the City or the compensation due the proposer.
- C. Proposers are advised that all City contracts are subject to all legal requirements provided for in the City of Hollywood Charter, Code of Ordinances and applicable County Ordinances, State Statutes and Federal Statutes.

### **1.3 PREPARATION OF BIDS/PROPOSALS**

Bids/proposals shall be prepared in accordance with the bid/proposal response format. Bids/proposals not complying with this format may be considered non-responsive and may be removed from consideration on this basis. Each proposer, by making a bid/proposal, represents that this document has been read and is fully understood.

Bids/proposals will be prepared in accordance with the following:

- A. The City's enclosed bid/proposal Forms, in their entirety, are to be used in submitting your bid/proposal. **NO OTHER FORM WILL BE ACCEPTED.**
- B. All information required by the bid/proposal form shall be furnished. The proposer shall sign each continuation sheet (where indicated) on which an entry is made.

C. Prices shall be shown and where there is an error in extension of prices, the unit price shall govern.

The City of Hollywood is exempt from payment to its vendors of State of Florida sales tax and, therefore, such taxes should not be figured into the SOLICITATION. However, this exemption does not apply to suppliers to the City in their (supplier) purchases of goods or services, used in work or goods supplied to the City. Proposers are responsible for any taxes, sales or otherwise, levied on their purchases, subcontracts, employment, etc. An exemption certificate will be signed where applicable, upon request. The City will pay no sales tax.

#### **1.4 DESCRIPTION OF SUPPLIES (As Applicable)**

Any manufacturer's names, trade names, brand names, or catalog numbers used in these applications are for the purpose of describing and establishing minimum requirements or level of quality, standards of performance, and design required, and are in no way intended to prohibit the bidding of other manufacturers' items of equal material, unless specifications state "NO SUBSTITUTIONS."

Proposers must indicate any variances to the specifications, terms, and conditions, no matter how slight. If variations are not stated in the bid/proposal, it shall be construed that the bid/proposal fully complies with the Specifications, Terms and Conditions.

Proposers are required to state exactly what they intend to furnish; otherwise they shall be required to furnish the items as specified.

Proposers will submit, with their bid/proposal, necessary data (factory information sheets, specifications, brochures, etc.) to evaluate and determine the quality of the item(s) they are proposing.

The City shall be the sole judge of equality and its decision shall be final.

#### **1.5 ADDENDA**

The Procurement Services Division may issue an addendum in response to any inquiry received, prior to bid/proposal opening, which changes, adds to or clarifies the terms, provisions or requirements of the solicitation. The Proposer should not rely on any representation, statement or explanation, whether written or verbal, other than those made in this solicitation document or in any addenda issued. Where there appears to be a conflict between this solicitation and any addendum, the last addendum issued shall prevail. It is the proposer's responsibility to ensure receipt of all addenda and any accompanying documents. Proposer(s) shall acknowledge receipt of any formal Addenda by signing the addendum and including it with their bid/proposal. Failure to include signed formal addenda in its bid/proposal shall cause the City to deem the bid/proposal non-responsive provided, however, that the City may waive this requirement in its best interest.

#### **1.6 REJECTION OF BIDS/PROPOSALS**

To the extent permitted by applicable state and federal laws and regulations, the City reserves the right to reject any and all bids/proposals, to waive any and all informalities, irregularities and technicalities not involving price, time or changes in the commodities and/or services, and the right to disregard all nonconforming, non-responsive, unbalanced or conditional bids/proposals. Bids/proposals will be considered irregular and may be rejected if they show serious omissions, alterations in form, additions not called for, conditions or unauthorized alterations or irregularities of any kind.

The City also reserves the right to waive minor technical defects in a bid/proposal. The City reserves the right to determine, in its sole discretion, whether any aspect of a bid/proposal satisfies the criteria established in this Solicitation.

The City reserves the right to reject, in whole or in part, the bid/proposal of any Proposer if the City believes that it would not be in the best interest of the City to make an award to that Proposer, whether because the bid/proposal is not responsive or the Proposer is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criterion established by City.

The foregoing reasons for rejection of bids/proposals are not intended to be exhaustive.

The City may reject a bid/proposal if:

A. The Proposer fails to acknowledge receipt of an addendum, or if

- B. The Proposer misstates or conceals any material fact in the bid/proposal, or if
- C. The bid/proposal does not strictly conform to the law or requirements of the SOLICITATION, or if
- D. The City is under a pre- lawsuit claim or current litigation with the proposer.

Additionally, any one of the following causes (not limited to) may be considered as sufficient justification to disqualify a Bidder and reject his/her Bid:

- A. Submission of more than one Bid for the same work by an individual, firm, partnership or corporation under the same or different names.
- B. Evidence of collusion.
- C. Previous participation in collusive Bidding on work for the City of Hollywood, Florida.
- D. Submission of an unbalanced Bid in which the prices Bid for some items are out of proportion to the prices Bid for other items.
- E. Lack of competency. The Engineer may declare any Bidder ineligible, at any time during the process or receiving Bids or awarding the Contract, if developments arise which, in his opinion, adversely affects the Bidder's responsibility. The Bidder will be given an opportunity, by the Engineer, to present additional evidence before final action is taken.
- F. Lack of responsibility as shown by past work judged by the Engineer from the standpoint of workmanship and progress.
- G. Uncompleted work for which the Bidder is committed by Contract, which is in the judgment of the Engineer, might hinder or prevent the prompt completion of work under this Contract

The City may reject all bids whenever it is deemed in the best interest of the City to do so, and may reject any part of a bid unless the bid has been qualified as provided in herein.

#### **1.7 WITHDRAWAL OF BIDS**

- A. Bids may not be withdrawn and shall be deemed enforceable for a period of 180 days after the time set for the SOLICITATION opening.
- B. Bids may be withdrawn prior to the time set for the SOLICITATION opening. Such request must be in writing.
- C. The City will permanently retain as liquidated damages and the bid deposit furnished by any Bidder who requests to withdraw a bid after the SOLICITATION opening.

#### **1.8 BIDS TO REMAIN OPEN**

All bids shall remain open for 180 calendar days after the day of the bid opening, but the City may, at its sole discretion, release any bid and return the bid Security prior to that date.

Extensions of time when bids shall remain open beyond the 180 day period may be made only by mutual written agreement between the City, the successful Bidder and the surety, if any, for the successful Bidder.

#### **1.9 LATE BIDS OR MODIFICATIONS**

Only bids received as of the opening date and time will be considered timely. Bids and modifications received after the time set for the opening will be returned un-opened to the sender and rejected as late.

#### **1.10 CONFLICTS WITHIN THE SOLICITATION**

Where there appears to be a conflict between the General Terms and Conditions, Special Conditions, the Technical Specifications, the SOLICITATION Submittal Section, or any addendum issued, the order of precedence shall be the last addendum issued, the SOLICITATION Submittal Section, the Technical Specifications, the Special Conditions, and then the General Terms and Conditions.

#### **1.11 CLARIFICATION OR OBJECTION TO BID SPECIFICATIONS**

If any person contemplating submitting a bid for this contract is in doubt as to the true meaning of the specifications or other SOLICITATION documents or any part thereof, they may submit requests for clarification to the Procurement Services Division on or before the date specified for a request for clarification. All such requests for clarification shall be made in writing and the person submitting the request will be responsible for its prompt delivery. Any interpretation of the SOLICITATION, if made, will be made only by Addendum duly issued. A copy of such Addendum will be made available to each person receiving a Solicitation. The City will not be responsible for any other explanation or interpretation of the SOLICITATION given prior to the award of the contract. Any objection to the specifications and requirements as set forth in this SOLICITATION must be filed in writing with the Chief Procurement Officer on or before the date specified for a request for clarification.

#### **1.12 COMPETENCY OF PROPOSERS**

Pre-award inspection of the Bidder's facility may be made prior to the award of a contract. Bids will be considered only from firms which are regularly engaged in the business of providing the goods and/or services as described in this SOLICITATION(s); have a record of performance for a reasonable period of time; and have sufficient financial support, equipment and organization to ensure that they can satisfactorily deliver the material and/or services if awarded a Contract under the terms and conditions herein stated. The terms "equipment and organization" as used herein shall be construed to mean a fully equipped and well established company in line with the best business practices in the industry and as determined by the proper authorities of the City.

The City may consider any evidence available to it of the financial, technical and other qualifications and abilities of a proposer, including past performance (experience) in making the award in the best interest of the City. In all cases the City of Hollywood shall have no liability to any proposer for any costs or expense incurred in connection with this SOLICITATION or otherwise.

#### **1.13 QUALIFICATIONS OF PROPOSERS**

No Bid will be accepted from, nor will any contract be awarded to any person who is in arrears to the City upon any debt or contract, or who is a defaulter, as surety or otherwise, upon any obligation to City, or who is deemed responsible or unreliable by the City.

As part of the bid evaluation process, City may conduct a background investigation including a record check by the Hollywood Police Department. Proposer's submission of a bid constitutes acknowledgment of the process and consent to such investigation. City shall be the sole judge in determining a Bidder's qualifications.

#### **1.14 CONSIDERATION OF BIDS**

In cases where an item requested is identified by a manufacturer's name, trade name, catalog number, or reference, it is understood that the Vendor proposes to furnish the item so identified and does not propose to furnish an "equal" unless the proposed "equal" is pre-approved by the City.

References to any of the above are intended to be descriptive but not restrictive and only indicate articles that will be satisfactory. A bid of an "equal" will be considered, provided that the Vendor states in his bid exactly what he proposes to furnish, including sample, illustration, or other descriptive matter which will clearly indicate the character of the article covered by such bid. The designated City representative hereby reserves the right to approve as an "equal", or to reject as not being an "equal", any article proposed which contains major or minor variations from specifications requirements.

#### **1.15 AWARD OF CONTRACT**

If the Contract is to be awarded, it will be awarded, after evaluation by the City, to the responsible and responsive Proposer whom the City determines will be in the best interests of the City and not necessarily to the lowest cost Proposer. Proposers may be invited to an oral interview before the committee. A short list of finalists will be determined and presented to either the City Manager or his/her designee or to the City Commission, in accordance with the applicable City of Hollywood Code of Ordinances, and will make the final ranking for the purposes of negotiating a contract with the top ranked firm. The successful Proposer shall be required to sign a negotiated contract; the refusal or failure of a successful Proposer to execute a contract which contains the mandatory material terms and conditions contained in the SOLICITATION, shall be grounds for deeming the Proposer and/or the Proposer's bid/proposal non-responsive.

If applicable, the Proposer to whom award is made shall execute a written contract prior to award by the City Commission. If the Proposer to whom the first award is made fails to enter into a contract as herein provided, the Contract may be let to the next highest ranked Proposer who is responsible and responsive in the opinion of the City.

#### **1.16 BASIS FOR AWARD, EVALUATION CRITERIA AND QUESTIONS**

The qualification of bid/proposal responders on this project will be considered in making the award. The City is not obligated to accept any bid/proposal if deemed not in the best interest of the City to do so. The City shall make award to a qualified proposer based on fees submitted and responses to this SOLICITATION.

Failure to include in the bid all information outlined herein may be cause for rejection of the bid.

The City reserves the right to accept or reject any and all bids, in whole or in part, as determined to be in the best interest of the City in its sole discretion.

The City reserves the right to waive any informalities or irregularities in bids.

The City reserves the right to negotiate separately the terms and conditions or all or any part of the bids as deemed to be in the City's best interest in its sole discretion.

Information and/or factors gathered during interviews, negotiations and any reference checks, and any other information or factors deemed relevant by the City, shall be utilized in the final award. The final award of a contract is subject to approval by the City Commission.

#### **1.17 AGREEMENT**

An agreement shall be sent to the awarded proposer to be signed, witnessed, and returned to the City for execution. The City will provide a copy of the fully executed agreement to the awarded proposer.

#### **1.18 NOTICE TO PROCEED**

A signed purchase order, blanket purchase order or fully executed agreement will be the Proposer's authorization to proceed and may substitute for a "Notice to Proceed" form.

#### **1.19 BID PROTESTS**

The City shall provide notice of its intent to award or reject to all Proposers by posting such notice on the City's website.

After a notice of intent to award a contract is posted, any actual or prospective proposer who is aggrieved in connection with the pending award of the contract or any element of the process leading to the award of the contract may protest to the Director of Procurement Services. A protest must be filed within five business days after posting or any right to protest is forfeited. The protest must be in writing, must identify the name and address of the protester, and must include a factual summary of, and the basis for, the protest. Filing shall be considered complete when the protest, including a deposit, is received by the Procurement Services Division. Failure to file a protest within the time-frame specified herein shall constitute a full waiver of all rights to protest the City's decision regarding the award.

The written protest shall state in detail the specific facts and law or ordinance upon which the protest of the proposed award is based, and shall include all pertinent documents.

A written protest may not challenge the relative weight of evaluation criteria or a formula for assigning points.

Upon receipt of a formal written protest, the City shall stop award proceedings until resolution of the protest; unless it has been determined that the award of the contract without delay is necessary to protect substantial interests of the City.

Any and all costs incurred by a protesting party in connection with a bid protest shall be the sole responsibility of the protesting party.

Upon receipt of a protest of the pending award of a contract, a copy of the protest shall promptly be forwarded to the City Attorney. The City Attorney shall thereupon review the charge to determine its sufficiency, including whether the protest was timely filed. If upon review the City Attorney determines that the charge is insufficient, the City Attorney may issue a

summary dismissal of the protest. If upon review the City Attorney determines that the charge is sufficient, a hearing of the protest committee shall be scheduled.

A protest committee shall have the authority to review, settle and resolve the protest. The committee shall consist of three members appointed by the City Manager. The committee's review shall be informal.

If the protest committee determines that the pending award of a contract or any element of the process leading to the award involved a significant violation of law or applicable rule or regulation, all steps necessary and proper to correct the violation shall be taken. If the committee determines that the protest is without merit,

The Director shall promptly issue a decision in writing stating the reason for the decision and furnish a copy to the protester and any other interested party, and the process leading to the award shall proceed.

## **1.20 REQUIREMENTS FOR SIGNING BIDS/PROPOSALS**

Requirements for Signing Bid/Proposal:

- A. The bid/proposal must be signed in ink by an individual authorized to legally bind the person, partnership, company, or corporation submitting the bid/proposal. In cases where the bid/proposal is signed by a deputy or subordinate, the principal's proper written grant of authority to such deputy or subordinate must accompany the bid/proposal.
- B. Bids/proposals by corporations must be executed in the corporate name by the President or other corporate officers accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown below the signature.
- C. Bids/proposals by partnerships must be executed in the partnership name and signed by a general partner whose title must appear under the signature and the official address of the partnership must be shown below the signature.
- D. All manual signatures must have the name typed directly under the line of the signature
- E. The above requirements apply to all SOLICITATION addenda.

## **1.21 EXAMINATION OF BID DOCUMENTS**

Before submitting a bid, each Bidder must: examine the bid Documents thoroughly; consider federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress, performance, or provision of the commodities and/or services; study and carefully correlate Proposer's observations with the bid Documents, and notify the City's agent of all conflicts, errors and discrepancies in the bid Documents.

The submission of a bid/proposal will constitute an incontrovertible representation by the Bidder, that the Bidder has complied with every requirement of this SOLICITATION, that without exception, the bid is premised upon performing the services and/or furnishing the commodities and materials in accordance with such means, methods, techniques, sequences or procedures as may be indicated in or required by the bid/proposal Documents, and that the bid Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions of performance and furnishing of the goods and/or services.

## **1.22 PUBLIC RECORDS LAW**

If applicable, for each public agency contract for services, the Proposer is required to comply with F.S. 119.0701, which includes the following:

- A. Keep and maintain public records that ordinarily and necessarily would be required by the public agency in order to perform the service.
- B. Provide the public with access to public records on the same terms and conditions that the public agency would provide the records and at a cost that does not exceed the cost provided in F.S. Chapter 119 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.
- D. Meet all requirements for retaining public records and transfer, at no cost, to the public agency, all public records in possession of the proposer upon termination of the contract and destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically must be provided to the public agency in a format that is compatible with the information technology systems of the public agency.

Public records may be inspected and examined by anyone desiring to do so, at a reasonable time, under reasonable conditions, and under supervision by the custodian of the public record. Sealed Bids become subject to the public records disclosure requirements of F.S. Chapter 119, notwithstanding a proposers' request to the contrary, at the time the City provides notice of a decision or intended decision, or 30 days after the bid/proposal opening, whichever is earlier.

Financial statements submitted in response to a request by the City may be confidential and exempt from disclosure.

Data processing software obtained under a licensing agreement which prohibits its disclosure may also exempt.

Proposers are hereby notified and agree that all information submitted as part of, or in support of SOLICITATION submittals will be available for public inspection after opening of SOLICITATION in compliance with Chapter 119 of the Florida Statutes. The proposer shall not, unless required as part of this SOLICITATION, submit any information in response to this invitation which the proposer considers to be a trade secret, proprietary or confidential. The submission, not required as part of this SOLICITATION, of any information to the City in connection with this invitation shall be deemed conclusively to be a waiver of any trade secret or other protection, which would otherwise be available to the proposer.

### **1.23 INFORMATION**

For information concerning procedure for responding to this Solicitation (SOLICITATION), contact the Point of Contact in the Section 1.4. Such contact shall be for clarification purposes only. **It is preferred that all other questions be submitted in writing via OpenGov at least 10 calendar days prior to the bid/proposal due/opening date.**

### **1.24 N/A – INTENTIONALLY OMITTED**

### **1.25 MODIFICATION AND WITHDRAWAL OF BIDS/PROPOSALS**

Bids must be modified or withdrawn by an appropriate document duly executed in the manner that a bid must be executed and delivered to the place where bids are to be submitted at any time prior to the deadline for submitting bids. A request for withdrawal or a modification must be in writing and signed by a person duly authorized to do so and, in a case where signed by a deputy or subordinate, the principal's proper written grant of authority to such deputy or subordinate must accompany the request for withdrawal or modification. Withdrawal of a bid will not prejudice the rights of a Bidder to submit a new bid prior to the bid date and time. Except where provided in the following paragraph no bid may be withdrawn or modified after expiration of the period for receiving bids.

If, within twenty-four (24) hours after bids are opened, any Bidder files a duly signed written notice with the City and within five (5) calendar days thereafter demonstrates to the reasonable satisfaction of the City by clear and convincing evidence that there was a material and substantial mistake in the preparation of its bid, or that the mistake is clearly evident on the face of the bid but the intended correct bid is not similarly evident, then the Bidder may withdraw its bid and the bid Security will be returned.

### **1.26 N/A – INTENTIONALLY OMITTED**

### **1.27 OPEN END CONTRACT**

No guarantee is expressed or implied as to the total quantity of commodities/services to be purchased under any open end contract. Estimated quantities will be used for bid comparison purposes only. The City reserves the right to issue purchase orders as and when required, or a blanket purchase order and release partial quantities as and when required or any combination of the preceding.

ORDERING: The CITY reserves the right to purchase commodities/services specified herein through Contracts established by other governmental agencies or through separate procurement actions due to unique or special needs. If an urgent

delivery is required within a period shorter than the delivery time specified in the contract, and if the seller is unable to comply therewith, the City reserves the right to obtain such delivery from others without penalty or prejudice to the City or to the Bidder.

#### **1.28 AUDIT RIGHTS**

The City reserves the right to audit the records of the successful Bidder for the commodities and/or services provided under the Contract at any time during the performance and term of the Contract and for a period of three (3) years after completion and acceptance by the City. If required by the City, the successful Bidder agrees to submit to an audit by an independent certified public accountant selected by the City. The successful Bidder shall allow the City to inspect, examine and review the records of the successful Bidder in relation to this contract at any and all times during normal business hours during the term of the Contract.

#### **1.29 LOCAL, STATE AND FEDERAL COMPLIANCE REQUIREMENTS**

The Bidder shall comply with all local, state and federal directives, orders and laws as applicable to this SOLICITATION and subsequent contract(s) including, but not limited to:

- A. Equal Employment Opportunity (EEO), in compliance with Executive Order 11246 as amended and applicable to this contract.
- B. All manufactured items and fabricated assemblies shall comply with applicable requirements of the Occupation Safety and Health Act of 1970 as amended, and be in compliance with Chapter 442, Florida Statutes. Any toxic substance listed in Section 38F-41.03 of the Florida Administrative Code delivered as a result of this order must be accompanied by a completed Material Safety Data Sheet (MSDS).
- C. The Immigration and Nationality Act prohibits (i) the employment of an unauthorized alien when the employer knows the individual is an unauthorized alien and (ii) the employment of an individual without complying with the requirements of the federal employment verification system. If a proposer commits either of these violations, such violation shall be cause for unilateral cancellation of the contract.
- D. This Section applies only to any contract for goods or services of \$1 million or more: The Proposer certifies that it is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List and that it does not have business operations in Cuba or Syria as provided in section 287.135, Florida Statutes (2011), as may be amended or revised. The City may terminate this Contract at the City's option if the Proposer is found to have submitted a false certification as provided under subsection (5) of section 287.135, Florida Statutes (2011), as may be amended or revised, or been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or has engaged in business operations in Cuba or Syria, as defined in Section 287.135, Florida Statutes (2011), as may be amended or revised.

#### **1.30 FRAUD AND MISREPRESENTATION**

Any individual, corporation or other entity that attempts to meet its contractual obligations with the City through fraud, misrepresentation or material misstatement, may be debarred from doing business with the City. The City as further sanction may terminate or cancel any other contracts with such individual, corporation or entity. Such individual or entity shall be responsible for all direct or indirect costs associated with termination or cancellation, including attorney's fees.

#### **1.31 DEBARRED OR SUSPENDED BIDDERS**

The bidder certifies, by submission of a response to this solicitation, that neither it nor its principals and sub bidder are presently debarred or suspended by any Federal department or agency.

#### **1.32 COLLUSION**

More than one bid/proposal received for the same work from an individual, firm, partnership, corporation or association under the same or different names will not be considered. Reasonable grounds for believing that any Bidder is interested in more than one bid for the same work will cause the rejection of such bid which the Bidder is interested. If there are reasonable grounds for believing that collusion exists among the Bidder, the bids of participants in such collusion will not be considered.

### **1.33 COPELAND "ANTI-KICKBACK"**

The Bidder and all sub bidders will comply with the Copeland Anti-Kickback Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR Part 3).

### **1.34 FORCE MAJEURE**

The Agreement which is awarded to the successful proposer may provide that the performance of any act by the City or Bidder hereunder may be delayed or suspended at any time while, but only so long as, either party is hindered in or prevented from performance by acts of God, the elements, war, rebellion, strikes, lockouts or any cause beyond the reasonable control of such party, provided however, the City shall have the right to provide substitute service from third parties or City forces and in such event the City shall withhold payment due the Bidder for such period of time. If the condition of force majeure exceeds a period of 14 days the City may, at its option and discretion, cancel or renegotiate this Agreement.

### **1.35 PUBLIC ENTITY CRIMES**

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 Bidder, supplier, sub bidder, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Florida Statutes, Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

### **1.36 DRUG-FREE WORKPLACE PROGRAM**

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.

### **1.37 SOLICITATION, GIVING, AND ACCEPTANCE OF GIFTS POLICY**

Bidder shall sign and submit the attached form indicating understanding and compliance with the City's and State's policies prohibiting solicitation and acceptance of gifts by public officers, employees and candidates. Failure to submit the signed form will result in your bid being declared non-responsive; provided, however, that a responsible Bidder whose bid would be responsive but for the failure to submit the signed form in its bid may be given the opportunity to submit the form to the City within five calendar days after notification by the City, if this is determined to be in the best interest of the City.

### **1.38 CONFLICT OF INTEREST**

The Bidder represents that:

No officer, director, employee, agent, or other consultant of the City or a member of the immediate family or household of the aforesaid has directly or indirectly received or been promised any form of benefit, payment or compensation, whether tangible or intangible, in connection with the grant of this Agreement.

There are no undisclosed persons or entities interested with the Proposer in this Agreement. This Agreement is entered into by the Proposer without any connection with any other entity or person making a bid Bidder for the same purpose, and without collusion, fraud or conflict of interest. No elected or appointed officer or official, director, employee, agent or other consultant of the City, or of the State of Florida (including elected and appointed members of the legislative and executive branches of government), or member of the immediate family or household of any of the aforesaid:

1. Is interested on behalf of or through the Bidder directly or indirectly in any manner whatsoever in the execution or the performance of this Agreement, or in the services, supplies or work, to which this Agreement relates or in any portion of the revenues; or

2. Is an employee, agent, advisor, or consultant to the Proposer or to the best of the Proposer's knowledge, any sub bidder or supplier to the Bidder.

Neither the Bidder nor any officer, director, employee, agent, parent, subsidiary, or affiliate of the Bidder shall have an interest which is in conflict with the Bidder's faithful performance of its obligations under this Agreement; provided that the City, in its sole discretion, may consent in writing to such a relationship, and provided the Bidder provides the City with a written notice, in advance, which identifies all the individuals and entities involved and sets forth in detail the nature of the relationship and why it is in the City's best interest to consent to such relationship.

The provisions of this Article are supplemental to, not in lieu of, all applicable laws with respect to conflict of interest. In the event there is a difference between the standards applicable under this Agreement and those provided by statute, the stricter standard shall apply.

In the event the Bidder has no prior knowledge of a conflict of interest as set forth above and acquires information which may indicate that there may be an actual or apparent violation of any of the above, the Bidder shall promptly bring such information to the attention of the City's ENGINEER. The Bidder shall thereafter cooperate with the City's review and investigation of such information, and comply with the instructions the Bidder receives from the ENGINEER in regard to remedying the situation.

#### **1.39 DISCRIMINATION**

Any entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid on a contract to provide goods or services to a public entity, may not submit a bid on a contract with a public entity for 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 award or perform work as a proposer, supplier, sub bidder, or consultant under contract with any public entity, and may not transact business with any public entity.

#### **1.40 ADVICE OF OMISSION OR MISSTATEMENT**

In the event it is evident to a Vendor responding to this SOLICITATION that the City has omitted or misstated a material requirement to this SOLICITATION and/or the services required by this SOLICITATION, the responding Vendor shall advise the contact identified in the SOLICITATION Clarifications and Questions section above of such omission or misstatement.

#### **1.41 CONFIDENTIAL INFORMATION**

Information contained in the Vendor's bid that is company confidential must be clearly identified in the bid/proposal itself. The City will be free to use all information in the Vendor's bid for the City's purposes, in accordance with State Law. Vendor bids shall remain confidential for 30 days or until a notice of intent to award is posted, which is sooner. The Vendor understands that any material supplied to the City may be subject to public disclosure under the Public Records Law.

#### **1.42 GOVERNING LAW**

This Contract, including appendices, and all matters relating to this Contract (whether in contract, statute, tort (such as negligence), or otherwise) shall be governed by, and construed in accordance with, the laws of the State of Florida. This shall apply notwithstanding such factors which include, but are not limited to, the place where the contract is entered into, the place where the accident occurs and notwithstanding application of conflicts of law principles.

#### **1.43 LITIGATION VENUE**

The parties waive the privilege of venue and agree that all litigation between them in the state courts shall take place in Broward County, Florida and that all litigation between them in the federal courts shall take place in the Southern District of Florida.

#### **1.44 SOVEREIGN IMMUNITY**

Nothing in this agreement shall be interpreted or construed to mean that the city waives its common law sovereign immunity or the limits of liability set forth in Section 768.28, Florida Statute.

#### **1.45 SURVIVAL**

The parties acknowledge that any of the obligations in this Agreement will survive the term, termination and cancellation hereof. Accordingly, the respective obligations of the Proposer and the City under this Agreement, which by nature would continue beyond the termination, cancellation or expiration thereof, shall survive termination, cancellation or expiration hereof.

#### **1.46 INDEMNIFICATION AND HOLD HARMLESS AGREEMENT**

The Contractor shall indemnify and hold harmless the City of Hollywood and its officers, employees, agents and instrumentalities from any and all liability, losses or damages. In addition, the City shall be entitled to attorney's fees and costs of defense, which the City of Hollywood, or its officers, employees, agents or instrumentalities may incur as a result of claims, demands, suits, causes of actions or proceedings of any kind or nature arising out of, relating to or resulting from the performance of this project by the awarded Bidder or its employees, agents, servants, partners, principals or subcontractors. Furthermore, the awarded Bidder shall pay all claims and losses in connection therewith and shall investigate and defend all claims, suits or actions of any kind of nature in the name of the City of Hollywood, where applicable, including appellate proceedings, and shall pay all costs, judgments, and attorney's fees which may issue thereon. The awarded Bidder expressly understands and agrees that any insurance protection required by the resulting agreement or otherwise provided by the awarded Bidder shall cover the City of Hollywood, its officers, employees, agents and instrumentalities and shall include claims for damages resulting from and/or caused by the negligence, recklessness or intentional wrongful misconduct of the Contractor and persons employed by or utilized by the Contractor in the performance of the contract.

#### **1.47 PATENT AND COPYRIGHT INDEMNIFICATION**

The Bidder warrants that all deliverables furnished hereunder, including but not limited to: services, equipment programs, documentation, software, analyses, applications, methods, ways, processes, and the like, do not infringe upon or violate any patent, copyrights, service marks, trade secret, or any other third party proprietary rights.

The Bidder shall be liable and responsible for any and all claims made against the City for infringement of patents, copyrights, service marks, trade secrets or any other third party proprietary rights, by the use or supplying of any programs, documentation, software, analyses, applications, methods, ways, processes, and the like, in the course of performance or completion of, or in any way connected with, the work, or the City's continued use of the deliverables furnished hereunder. Accordingly, the Bidder, at its own expense, including the payment of attorney's fees, shall indemnify, and hold harmless the City and defend any action brought against the City with respect to any claim, demand, and cause of action, debt, or liability.

In the event any deliverable or anything provided to the City hereunder, or a portion thereof, is held to constitute an infringement and its use is or may be enjoined, the Bidder shall have the obligation, at the City's option, to (i) modify, or require that the applicable sub bidder or supplier modify, the alleged infringing item(s) at the Bidder's expense, without impairing in any respect the functionality or performance of the item(s), or (ii) procure for the City, at the Bidder's expense, the rights provided under this Agreement to use the item(s).

The Bidder shall be solely responsible for determining and informing the City whether a prospective supplier or sub bidder is a party to any litigation involving patent or copyright infringement, service mark, trademark, violation, or proprietary rights claims or is subject to any injunction which may prohibit it from providing any deliverable hereunder. The Bidder shall enter into agreements with all suppliers and sub bidder at the Bidder's own risk. The City may reject any deliverable that it believes to be the subject of any such litigation or injunction, or if, in the City's judgment, use thereof would delay the work or be unlawful.

The Bidder shall not infringe any copyright, trademark, service mark, trade secrets, patent rights, or other intellectual property rights in the performance of the work.

#### **1.48 ADVERTISING**

Vendor shall not advertise or publish the fact that the City has placed this order without prior written consent from the City, except as may be necessary to comply with a proper request for information from an authorized representative of a governmental unit or agency.

#### **1.49 DISCLAIMER**

The Hollywood may, in its sole discretion, accept or reject, in whole or in part, for any reason whatsoever any or all bids; re-advertise this SOLICITATION, postpone or cancel at any time this SOLICITATION process; or, waive any formalities of or irregularities in the bid process. Bids that are not submitted on time and/or do not conform to the City of Hollywood's requirements will not be considered. After all bids are analyzed, organization(s) submitting bid that appear, solely in the opinion of the City of Hollywood, to be the most competitive, shall be submitted to the City of Hollywood's City Commission, and the final selection will be made shortly thereafter with a timetable set solely by the City of Hollywood. The selection by the City of Hollywood shall be based on the bid, which is, in the sole opinion of the City Commission of the City of Hollywood, in the best interest of the City of Hollywood. The issuance of this SOLICITATION constitutes only an invitation to make a bid to the City of Hollywood. The City of Hollywood reserves the right to determine, in its sole discretion, whether any aspect of the bid satisfies the criteria established by the City. In all cases the City of Hollywood shall have no liability to any proposer for any costs or expense incurred in connection with this bid or otherwise.

#### **1.50 TRADEMARKS**

The City warrants that all trademarks the City requests the Vendor to affix to articles purchased are those owned by the City and it is understood that the Vendor shall not acquire or claim any rights, title, or interest therein, or use any of such trademarks on any articles produced for itself or anyone other than the City.

#### **1.51 RIGHT TO REQUEST ADDITIONAL INFORMATION**

The City reserves the right to request any additional information that might be deemed necessary during the evaluation process.

#### **1.52 BID PREPARATION COSTS**

The Vendor is responsible for any and all costs incurred by the Vendor or his/her sub bidders in responding to this solicitation.

#### **1.53 DESIGN COSTS (N/A)**

#### **1.54 ADDITIONAL CHARGES**

No additional charges, other than those listed on the price breakdown sheets, shall be made. Prices quoted will include verification/coordination of order, all costs for shipping, delivery to all sites, unpacking, setup, installation, operation, testing, cleanup, training and Vendor travel charges.

#### **1.55 RIGHTS TO PERTINENT MATERIALS**

All responses, inquires, and correspondence relating to this SOLICITATION and all reports, charts, displays, schedules, exhibits and other documentation produced by the Vendor that are submitted as part of the bid shall become the property of the City upon receipt, a part of a public record upon opening, and will not be returned.

#### **1.56 INSURANCE REQUIREMENTS**

See insurance requirements in the main solicitation document.

#### **1.57 NATURE OF THE AGREEMENT**

The Agreement incorporates and includes all negotiations, correspondence, conversations, agreements, and understandings applicable to the matters contained in the Agreement. The parties agree that there are no commitments, agreements, or understandings concerning the subject matter of the Agreement that are not contained in the Agreement, and that the Agreement contains the entire agreement between the parties as to all matters contained herein. Accordingly, it is agreed that no deviation from the terms hereof shall be predicated upon any prior representations or agreements, whether oral or written. It is further agreed that any oral representations or modifications concerning this Agreement shall be of no force or effect, and that the Agreement may be modified, altered or amended only by a written amendment duly executed by both parties hereto or their authorized representatives.

The Bidder shall provide the services set forth in the Scope of Services, and render full and prompt cooperation with the City in all aspects of the services performed hereunder.

The Bidder acknowledges that the Agreement requires the performance of all things necessary for or incidental to the effective and complete performance of all work and services under this Contract. All things not expressly mentioned in the Agreement but necessary to carrying out its intent are required by the Agreement, and the Bidder shall perform the same as though they were specifically mentioned, described and delineated.

The Bidder shall furnish all labor, materials, tools, supplies, and other items required to perform the work and services that are necessary for the completion of this Contract. All work and services shall be accomplished at the direction of and to the satisfaction of the City's ENGINEER.

The Bidder acknowledges that the City shall be responsible for making all policy decisions regarding the Scope of Services. The Proposer agrees to provide input on policy issues in the form of recommendations.

The Bidder agrees to implement any and all changes in providing services hereunder as a result of a policy change implemented by the City. The Bidder agrees to act in an expeditious and fiscally sound manner in providing the City with input regarding the time and cost to implement said changes and in executing the activities required to implement said changes

#### **1.58 AUTHORITY OF THE CITY'S ENGINEER**

The Bidder hereby acknowledges that the City's ENGINEER will determine in the first instance all questions of any nature whatsoever arising out of, under, or in connection with, or in any way related to or on account of, this Agreement including without limitations: questions as to the value, acceptability and fitness of the services; questions as to either party's fulfillment of its obligations under the Contract; negligence, fraud or misrepresentation before or subsequent to acceptance of the Bid; questions as to the interpretation of the Scope of Services; and claims for damages, compensation and losses.

The Bidder shall be bound by all determinations or orders and shall promptly obey and follow every order of the ENGINEER, including the withdrawal or modification of any previous order and regardless of whether the Bidder agrees with the ENGINEER's determination or order. Where orders are given orally, they will be issued in writing by the ENGINEER as soon thereafter as is practicable.

The Bidder must, in the final instance, seek to resolve every difference concerning the Agreement with the ENGINEER. In the event that the ENGINEER and the Bidder are unable to resolve their difference, the Bidder may initiate a dispute in accordance with the procedures set forth in the section below. Exhaustion of these procedures shall be a condition precedent to any lawsuit permitted hereunder.

In the event of such dispute, the parties to this Agreement authorize the City Manager or designee, who may not be the ENGINEER or anyone associated with this Project, acting personally, to decide all questions arising out of, under, or in connection with, or in any way related to or on account of the Agreement (including but not limited to claims in the nature of breach of contract, fraud or misrepresentation arising either before or subsequent to execution hereof) and the decision of each with respect to matters within the City Manager's purview as set forth above shall be conclusive, final and binding on the parties. Any such dispute shall be brought, if at all, before the City Manager within 10 days of the occurrence, event or act out of which the dispute arises.

The City Manager may base this decision on such assistance as may be desirable, including advice of experts, but in any event shall base the decision on an independent and objective determination of whether the Bidder's performance or any deliverable meets the requirements of this Agreement and any specifications with respect thereto set forth herein. The effect of any decision shall not be impaired or waived by any negotiations or settlements or offers made in connection with the dispute, whether or not the City Manager participated therein, or by any prior decision of others, which prior decision shall be deemed subject to review, or by any termination or cancellation of the Agreement. All such disputes shall be submitted in writing by the Bidder to the City Manager for a decision, together with all pertinent information in regard to such questions, in order that a fair and impartial decision may be made. The parties agree that whenever the City Manager is entitled to exercise discretion or judgment or to make a determination or form an opinion pursuant to the provisions of this Article, such action shall be deemed fair and impartial when exercised or taken. The City Manager shall render a decision in writing and deliver a copy of the same to the Bidder. Except as such remedies may be limited or waived elsewhere in the Agreement, the Bidder reserves the right to pursue any remedies available under law after exhausting the provisions of this Article.

### **1.59 MUTUAL OBLIGATIONS**

This Agreement, including attachments and appendices to the Agreement, shall constitute the entire Agreement between the parties with respect hereto and supersedes all previous communications and representations or agreements, whether written or oral, with respect to the subject matter hereof unless acknowledged in writing by the duly authorized representatives of both parties.

Nothing in this Agreement shall be construed for the benefit, intended or otherwise, of any third party that is not a parent or subsidiary of a party or otherwise related (by virtue of ownership control or statutory control) to a party.

In those situations where this Agreement imposes an indemnity or defense obligation on the Bidder, the City may, at its expense, elect to participate in the defense if the City should so choose. Furthermore, the City may at its own expense defend or settle any such claims if the Bidder fails to diligently defend such claims, and thereafter seek indemnity for costs and attorney's fees from the Bidder.

### **1.60 SUBCONTRACTUAL RELATIONS**

If the Bidder will cause any part of this Agreement to be performed by a sub bidder, the provisions of this Contract will apply to such sub bidder and its officers, agents and employees in all respects as if it and they were employees of the Proposer; and the Proposer will not be in any manner thereby discharged from its obligations and liabilities hereunder, but will be liable hereunder for all acts and negligence of the sub bidder, its officers, agents, and employees, as if they were employees of the Proposer. The services performed by the sub bidder will be subject to the provisions hereof as if performed directly by the Bidder.

The Bidder, before making any subcontract for any portion of the services, will state in writing to the City the name of the proposed sub bidder, the portion of the services which the sub bidder is to do, the place of business of such sub bidder, and such other information as the City may require. The City will have the right to require the Bidder not to award any subcontract to a person, firm or corporation disapproved by the City.

Before entering into any subcontract hereunder, the Bidder will inform the sub bidder fully and completely of all provisions and requirements of this Agreement relating either directly or indirectly to the services to be performed. Such services performed by such sub bidder will strictly comply with the requirements of this Contract.

In order to qualify as a sub bidder satisfactory to the City, in addition to the other requirements herein provided, the sub bidder must be prepared to prove to the satisfaction of the City that it has the necessary facilities, skill and experience, and ample financial resources to perform the services in a satisfactory manner. To be considered skilled and experienced, the sub bidder must show to the satisfaction of the City that it has satisfactorily performed services of the same general type which are required to be performed under this Agreement.

The City shall have the right to withdraw its consent to a subcontract if it appears to the City that the subcontract will delay, prevent, or otherwise impair the performance of the Bidder's obligations under this Agreement. All sub bidder are required to protect the confidentiality of the City and City's proprietary and confidential information. The Bidder shall furnish to the City copies of all subcontracts between the Bidder and sub bidder and suppliers hereunder. Within each such subcontract, there shall be a clause for the benefit of the City permitting the City to request completion of performance by the sub bidder of its obligations under the subcontract, in the event the City finds the Bidder in breach of its obligations, and the option to pay the sub bidder directly for the performance by such sub bidder. The foregoing shall neither convey nor imply any obligation or liability on the part of the City to any sub bidder hereunder as more fully described herein.

### **1.61 PROMPT PAYMENT: LATE PAYMENTS BY BIDDER TO SUB BIDDER AND MATERIAL SUPPLIERS; PENALTY:**

When a Bidder receives from the City of Hollywood any payment for contractual services, commodities, materials, supplies, or construction contracts, the proposer shall pay such moneys received to each sub bidder and material supplier in proportion to the percentage of work completed by each sub bidder and material supplier at the time of receipt. If the Bidder receives less than full payment, then the proposer shall be required to disburse only the funds received on a pro rata basis to the sub bidder and materials Suppliers, each receiving a prorated portion based on the amount due on the payment. If the proposer without reasonable cause fails to make payments required by this section to sub bidder and material suppliers within fifteen (15) working days after the receipt by the Bidder of full or partial payment, the proposer shall pay to the sub bidder and material suppliers a penalty in the amount of one percent (1%) of the amount due, per month, from the expiration of the period allowed herein for payment. Such penalty shall be in addition to actual payments owed. Retainage is also subject to the prompt payment requirement and must be returned to the sub bidder or material



supplier whose work has been completed, even if the prime contract has not been completed. The Bidder shall include the above obligation in each subcontract it signs with a sub bidder or material supplier.

#### **1.62 TERMINATION FOR CONVENIENCE AND SUSPENSION OF WORK**

The City may terminate this Agreement if an individual or corporation or other entity attempts to meet its contractual obligation with the City through fraud, misrepresentation or material misstatement.

The City may, as a further sanction, terminate or cancel any other contract(s) that such individual or corporation or other entity has with the City. Such individual, corporation or other entity shall be responsible for all direct and indirect costs associated with such termination or cancellation, including attorney's fees.

The foregoing notwithstanding, any individual, corporation or other entity which attempts to meet its contractual obligations with the City through fraud, misrepresentation or material misstatement may be debarred from City contracting in accordance with the City debarment procedures. The Bidder may be subject to debarment for failure to perform and any other reasons related to the Bidder's breach or failure of satisfactory performance.

In addition to cancellation or termination as otherwise provided in this Agreement, the City may at any time, in its sole discretion, with or without cause, terminate this Agreement by written notice to the Bidder and in such event:

The Bidder shall, upon receipt of such notice, unless otherwise directed by the City:

1. Stop work on the date specified in the notice ("the Effective Termination Date");
2. Take such action as may be necessary for the protection and preservation of the City's materials and property;
3. Cancel orders;
4. Assign to the City and deliver to any location designated by the City any non-cancelable orders for deliverables that are not capable of use except in the performance of this Agreement and which have been specifically developed for the sole purpose of this Agreement and not incorporated in the services;
5. Take no action which will increase the amounts payable by the City under this Agreement.

In the event that the City exercises its right to terminate this Agreement pursuant to this Article, the Bidder will be compensated as stated in the payment articles herein, for the:

1. Portion of the services completed in accordance with the Agreement up to the Effective Termination Date; and
2. Non-cancelable deliverables that are not capable of use except in the performance of this Agreement and which have been specifically developed for the sole purpose of this Agreement but not incorporated in the services.

All compensation pursuant to this Article is subject to audit.

#### **1.63 EVENT OF DEFAULT**

An Event of Default shall mean a breach of this Agreement by the Bidder. Without limiting the generality of the foregoing and in addition to those instances referred to herein as a breach, an Event of Default, shall include the following:

1. The Bidder has not delivered deliverables on a timely basis;
2. The Bidder has refused or failed, except in any case for which an extension of time is provided, to supply enough properly skilled staff personnel;
3. The Bidder has failed to make prompt payment to sub bidder or suppliers for any services;

4. The Bidder has become insolvent (other than as interdicted by the bankruptcy laws), or has assigned the proceeds received for the benefit of the Bidder 's creditors, or the Bidder has taken advantage of any insolvency statute or debtor/creditor law or if the Bidder 's affairs have been put in the hands of a receiver;
5. The Bidder has failed to obtain the approval of the City where required by this Agreement;
6. The Bidder has failed to provide "adequate assurances" as required under subsection "B" below; and
7. The Bidder has failed in the representation of any warranties stated herein.

When, in the opinion of the City, reasonable grounds for uncertainty exist with respect to the Proposer's ability to perform the services or any portion thereof, the City may request that the Proposer, within the time frame set forth in the City's request, provide adequate assurances to the City, in writing, of the Proposer's ability to perform in accordance with terms of this Agreement. Until the City receives such assurances the City may request an adjustment to the compensation received by the Proposer for portions of the services which the Proposer has not performed. In the event that the Proposer fails to provide to the City the requested assurances within the prescribed time frame, the City may:

1. Treat such failure as a repudiation of this Agreement;
2. Resort to any remedy for breach provided herein or at law, including but not limited to, taking over the performance of the services or any part thereof either by itself or through others.

In the event the City shall terminate this Agreement for default, the City or its designated representatives may immediately take possession of all applicable equipment, materials, products, documentation, reports and data.

#### **1.64 REMEDIES IN THE EVENT OF DEFAULT**

If an Event of Default occurs, the Proposer shall be liable for all damages resulting from the default, including but not limited to:

- A. Lost revenues;
- B. The difference between the cost associated with procuring services hereunder and the amount actually expended by the City for procurement of services, including procurement and administrative costs; and,
- C. Such other damages that the City may suffer.

The Proposer shall also remain liable for any liabilities and claims related to the Proposer's default. The City may also bring any suit or proceeding for specific performance or for an injunction.

#### **1.65 BANKRUPTCY**

The City reserves the right to terminate this contract if, during the term of any contract the Proposer has with the City, the Proposer becomes involved as a debtor in a bankruptcy proceeding, or becomes involved in a reorganization, dissolution, or liquidation proceeding, or if a trustee or receiver is appointed over all or a substantial portion of the property of the Proposer under federal bankruptcy law or any state insolvency law.

#### **1.66 CANCELLATION FOR UNAPPROPRIATED FUNDS**

The obligation of the City for payment to a Proposer is limited to the availability of funds appropriated in a current fiscal period, and continuation of the contract into a subsequent fiscal period is subject to appropriation of funds, **unless otherwise authorized by law.**

#### **1.67 VERBAL INSTRUCTIONS PROCEDURE**

No negotiations, decisions, or actions shall be initiated or executed by the Proposer as a result of any discussions with any City employee. Only those communications which are in writing from an authorized City representative may be considered. Only written communications from Proposers, which are signed by a person designated as authorized to bind the Proposer, will be recognized by the City as duly authorized expressions on behalf of the Proposer.

#### **1.68 E-VERIFY**

Proposer acknowledges that the City may be utilizing the Proposer's services for a project that is funded in whole or in part by State funds pursuant to a contract between the City and a State agency. The Proposer shall be responsible for complying with the E-Verify requirements in the contract and using the U.S. Department of Homeland Security's E-Verify system to verify the employment of all new employees hired by the Proposer during the Agreement term. The Proposer is also responsible for e-verifying its bidders, if any, pursuant to any agreement between the City and a State Agency, and reporting to the City any required information. The Proposer acknowledges that the terms of this paragraph are material terms, the breach of any of which shall constitute a default under this Agreement.

#### **1.69 BUDGETARY CONSTRAINTS**

In the event the City is required to reduce contract costs due to budgetary constraints, all services specified in this document may be subject to a permanent or temporary reduction in budget. In such an event, the total cost for the affected service shall be reduced as required. The Proposer shall also be provided with a minimum 30-day notice prior to any such reduction in budget.

#### **1.70 COST ADJUSTMENTS (As Applicable)**

The cost for all items as quoted herein shall remain firm for the first term of the contract. Costs for subsequent years and any extension term years shall be subject to an adjustment only if increases occur in the industry. However, unless very unusual and significant changes have occurred in the industry, such increases shall not exceed 3% per year or, whichever is less, the latest yearly percentage increase in the All Urban Consumers Price Index (CPU-U) (National) as published by the Bureau of Labor Statistics, U.S. Dept. of Labor. The yearly increase or decrease in the CPI shall be that latest index published and available ninety (90) days prior to the end of the contract year than in effect compared to the index for the same month one year prior. Any requested cost increase shall be fully documented and submitted to the City at least ninety (90) days prior to the contract anniversary date. Any approved cost adjustments shall become effective upon the anniversary date of the contract. In the event the CPI or industry costs decline, the City shall have the right to receive from the Proposer a reduction in costs that reflects such cost changes in the industry. The City may, after examination, refuse to accept the adjusted costs if they are not properly documented, increases are considered to be excessive, or decreases are considered to be insufficient. In the event the City does not wish to accept the adjusted costs and the matter cannot be resolved to the satisfaction of the City, the contract can be cancelled by the City upon giving thirty (30) days written notice to the Proposer.

#### **1.71 OSHA STANDARDS**

Proposer acknowledges and agrees that as Contractor for the City of Hollywood, Florida, within the limits of the City of Hollywood, Florida, will have the sole responsibility for compliance with all requirements of the Federal Occupational Safety and Health Act of 1970, and all State and local safety and health regulations, and agrees to defend, indemnify and hold harmless the City of Hollywood, Florida, its officials, employees, service providers, and its agents against any and all legal liability or loss the City of Hollywood, Florida may incur due to the Contractor's failure to comply with such act.

*END OF SECTION*



City of Hollywood  
Procurement Services  
Steve Stewart, Chief Procurement Officer  
2600 Hollywood Boulevard, Hollywood, FL 33020

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**PROPOSAL DOCUMENT REPORT**

IFB No. IFB-106-23-JJ

Stirling Road 8-Inch Water Main Extension

RESPONSE DEADLINE: August 16, 2023 at 3:00 pm

Report Generated: Thursday, August 17, 2023

**Sun Up Enterprises Proposal**

**CONTACT INFORMATION**

**Company:**

Sun Up Enterprises

**Email:**

sunupinc@aol.com

**Contact:**

Janet Cusanelli

**Address:**

16641 Waters Edge Dr  
Weston, FL 33326

**Phone:**

N/A

**Website:**

N/A

**Submission Date:**

Aug 16, 2023 10:20 AM

## ADDENDA CONFIRMATION

Addendum #1  
*Confirmed Aug 15, 2023 11:09 AM by Janet Cusanelli*

## QUESTIONNAIRE

### 1. VENDOR REFERENCE FORM\*

Please download the below documents, complete, and upload.

- [Vendor Reference Form.pdf](#)

Vendor\_References.pdf

### 2. HOLD HARMLESS AND INDEMNITY CLAUSE\*

I, an authorized representative, the contractor, shall indemnify, defend and hold harmless the City of Hollywood, its elected and appointed officials, employees and agents for any and all suits, actions, legal or administrative proceedings, claims, damage, liabilities, interest, attorney's fees, costs of any kind whether arising prior to the start of activities or following the completion or acceptance and in any manner directly or indirectly caused, occasioned or contributed to in whole or in part by reason of any act, error or omission, fault or negligence whether active or passive by the contractor, or anyone acting under its direction, control, or on its behalf in connection with or incident to its performance of the contract.

Confirmed

### 3. NON-COLLUSION STATEMENT\*

I, being first duly sworn, depose that:

- He/she is an authorized representative of the Company, the Proposer that has submitted the attached Proposal.
- He/she has been fully informed regarding the preparation and contents of the attached Proposal and of all pertinent circumstances regarding such Proposal;

- C. Such Proposal is genuine and is not a collusion or sham Proposal;
- D. Neither the said Proposer nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Proposer, firm or person to submit a collusive or sham Proposal in connection with the contractor for which the attached Proposal has been submitted or to refrain from bidding in connection with such contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Proposer, firm or person to fix the price or prices, profit or cost element of the Proposal price or the Proposal price of any other Proposer, or to secure an advantage against the City of Hollywood or any person interested in the proposed Contract; and
- E. The price or prices quoted in the attached Proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Proposer or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

Confirmed

#### **4. CERTIFICATIONS REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS\***

The applicant certifies that it and its principals:

- A. Are not presently debarred, suspended, proposed for debarment, declared ineligible, sentenced to a denial of Federal benefits by a State or Federal court, or voluntarily excluded from covered transactions by any Federal department or agency;
- B. Have not within a three-year period preceding this application been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction, violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- C. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (b) of this certification; and
- D. Have not within a three-year period preceding this application had one or more public transactions (Federal, State, or local) terminated for cause or default.

Confirmed

**5. DRUG-FREE WORKPLACE PROGRAM\***

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

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

Confirmed

## **6. SOLICITATION, GIVING, AND ACCEPTANCE OF GIFTS POLICY \***

Florida Statute 112.313 prohibits the solicitation or acceptance of Gifts. “No Public officer, employee of an agency, local government attorney, or candidate for nomination or election shall solicit or accept anything of value to the recipient, including a gift, loan, reward, promise of future employment, favor, or service, based upon any understanding that the vote, official action, or judgment of the public officer, employee, local government attorney, or candidate would be influenced thereby.” The term “public officer” includes “any person elected or appointed to hold office in any agency, including any person serving on an advisory body.”

The City of Hollywood/Hollywood CRA policy prohibits all public officers, elected or appointed, all employees, and their families from accepting any gifts of any value, either directly or indirectly, from any contractor, vendor, consultant, or business with whom the City/CRA does business.

The State of Florida definition of “gifts” includes the following:

- Real property or its use,
- Tangible or intangible personal property, or its use,
- A preferential rate or terms on a debt, loan, goods, or services,
- Forgiveness of indebtedness,
- Transportation, lodging, or parking,
- Food or beverage,
- Membership dues,
- Entrance fees, admission fees, or tickets to events, performances, or facilities,
- Plants, flowers or floral arrangements
- Services provided by persons pursuant to a professional license or certificate.
- Other personal services for which a fee is normally charged by the person providing the services.
- Any other similar service or thing having an attributable value not already provided for in this section.



Any contractor, vendor, consultant, or business found to have given a gift to a public officer or employee, or his/her family, will be subject to dismissal or revocation of contract.

As the person authorized to sign the statement, I certify that this firm will comply fully with this policy.

Confirmed

**7. Certificate of Insurance\***

See requirements in the [#SPECIAL TERM AND CONDITIONS](#) section.

COI.pdf

**8. PROOF OF SUNBIZ REGISTRATION\***

Enter company FEIN to be verified in Sunbiz

65-1095931

[Click to Verify](#) *Value will be copied to clipboard*

**9. ACKNOWLEDGMENT AND SIGNATURE PAGE**

IF CORPORATION - DATE INCORPORATED/ORGANIZED:\*

3/22/2001

STATE INCORPORATED/ORGANIZED:\*

FL

REMITTANCE ADDRESS\*

Sun Up Enterprises, Inc.

16641 Waters Edge Dr.

Weston, FL 33326

BIDDER/PROPOSER'S AUTHORIZED REPRESENTATIVE'S TYPED FULL NAME\*

Janet Cusanelli

IT IS HEREBY CERTIFIED AND AFFIRMED THAT THE BIDDER/PROPOSER CERTIFIES ACCEPTANCE OF THE TERMS, CONDITIONS, SPECIFICATIONS, ATTACHMENTS AND ANY ADDENDA. THE BIDDER/PROPOSER SHALL ACCEPT ANY AWARDS MADE AS A RESULT OF THIS SOLICITATION. BIDDER/PROPOSER FURTHER AGREES THAT PRICES QUOTED WILL REMAIN FIXED FOR THE PERIOD OF TIME STATED IN THE SOLICITATION.\*

Confirmed

THE EXECUTION OF THIS FORM CONSTITUTES THE UNEQUIVOCAL OFFER OF BIDDER/PROPOSER TO BE BOUND BY THE TERMS OF ITS PROPOSAL. FAILURE TO SIGN THIS SOLICITATION WHERE INDICATED BY AN AUTHORIZED REPRESENTATIVE SHALL RENDER THE BID/PROPOSAL NON-RESPONSIVE. THE CITY MAY, HOWEVER, IN ITS SOLE DISCRETION, ACCEPT ANY BID/PROPOSAL THAT INCLUDES AN EXECUTED DOCUMENT WHICH UNEQUIVOCALLY BINDS THE BIDDER/PROPOSER TO THE TERMS OF ITS OFFER.\*

Confirmed

PROPOSAL FORM\*

Please download the below documents, complete, and upload.

- [Proposal Form.docx](#)

Proposal\_Form.pdf

#### 10. SWORN STATEMENT PURSUANT TO SECTION 287.133 (3) (a) FLORIDA STATUTES ON PUBLIC ENTITY CRIMES

THIS FORM STATEMENT IS SUBMITTED TO THE CITY OF HOLLYWOOD BY:\*

(Print individual's name and title) (Print name of entity submitting sworn statement)

Sun Up Enterprises, Janet Cusanelli, President

SWORN STATEMENT CONTINUATION:\*

Enter business address:

16641 Waters Edge Dr., Weston, FL 33326

SWORN STATEMENT CONTINUATION:\*

Enter Federal Employer Identification Number (FEIN) is:

If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement.

65-1095931

SWORN STATEMENT CONTINUATION:\*

I understand that “convicted” or “conviction” as defined in Paragraph 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in an 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.

Confirm

SWORN STATEMENT CONTINUATION:\*

I understand that “Affiliate,” as defined in paragraph 287.133(1)(a), Florida Statutes, means:

1. A predecessor or successor of a person convicted of a public entity crime, or
2. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. 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 case 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.

Confirmed

SWORN STATEMENT CONTINUATION:\*

I understand that "person," as defined in Paragraph 287.133(1)(e), Florida Statutes, means any natural person or any 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 let by a public entity, or which otherwise transacts or applies to transact business with a public entity.

The term "person" includes those officers, executives, partners, shareholders, employees, members, and agents who are active in management of an entity

Confirmed

SWORN STATEMENT CONTINUATION:\*

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.)

Division of Administrative Hearings, determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (attach a copy of the Final Order).

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

SWORN STATEMENT CONFIRMATION\*

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THAT PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017 FLORIDA STATUTES FOR A CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

Confirmed

**PRICE TABLES**

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
1	Mobilization, Demobilization, Bonds & Insurance (10% Total Construction Costs) (tems 3-9)	1	LS	\$60,000.00	\$60,000.00
2	Maintenance of Traffic (MOT)	1	LS	\$85,000.00	\$85,000.00
3	Furnish & Install C900 - 8" PVC Water Main (Includes Pipes, Fittings and Caps)	770	LF	\$240.00	\$184,800.00
4	Furnish & Install Class 52 - 8" DIP Water Main (Includes Pipes, Fittings and Caps)	50	LF	\$240.00	\$12,000.00

PROPOSAL DOCUMENT REPORT  
 IFB No. IFB-106-23-JJ  
 Stirling Road 8-Inch Water Main Extension

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Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
5	Furnish & Install 8" Domestic DIP Tees	1	EA	\$2,000.00	\$2,000.00
6	Furnish & Install 8" Gate Valves	2	EA	\$4,500.00	\$9,000.00
7	Furnish & Install 8" Tapping Sleeve & Valve	1	EA	\$13,000.00	\$13,000.00
8	Milling (1½") & Resurfacing (1½") of FDOT Roadway	3,450	SY	\$25.00	\$86,250.00
9	Remove and Replace Concrete Curb and Gutter	20	LF	\$250.00	\$5,000.00
10	Temporary and Permanent Pavement Markings and Signage	1	LS	\$10,000.00	\$10,000.00
11	Owner's Contingency (allowance) (Please input \$109,000 in this line)	1	LS	\$109,000.00	\$109,000.00
12	Density Testing (allowance) (Please input \$19,000 in this line)	1	LS	\$19,000.00	\$19,000.00
13	Permits, Licenses and Fee (allowance) (Please input \$19,000 in this line)	1	LS	\$19,000.00	\$19,000.00
14	As-Builts and Record Drawings (By land surveyor approved by City or EOR)	1	LS	\$15,000.00	\$15,000.00
15	Consideration for Indemnification (Please input \$10 in this line)	1	LS	\$10.00	\$10.00
<b>TOTAL</b>					<b>\$629,060.00</b>

# FORM 4

## VENDOR REFERENCE FORM

City of Hollywood Solicitation #:

106-23-JJ

Reference for:

Sun Up Enterprises

Organization/Firm Name providing reference:

Stiles Construction

Organization/Firm Contact Name:

Jay Laing  
jay.laing@stiles.com

Email:

Title:

Proj. Manager

Phone:

56-758-0419

Name of Referenced Project:

Gunther Mazda

Contract No:

70388-08

Date Services were provided:

2.17.20 - 10.22.20

Project Amount:

\$446,690.00

Referenced Vendor's role in Project:

☐ Prime Vendor

☒ Subcontractor/ Subconsultant

Would you use the Vendor again?

☒ Yes

☐ NO. Please specify in additional comments

Description of services provided by Vendor (provide additional sheet if necessary):

- ALL CIVIL WORK OUTSIDE OF BUILDINGS, UNDERGROUND SOWB & WATER & DRAINAGE.  
- OFFSITE WORK TIE IN WATER MAINS IN MIDDLE OF COUNTY ROAD.

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
Vendor's Quality of Service				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Vendor's Organization:				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Staff turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Timeliness/Cost Control of:				
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Additional Comments (provide additional sheet if necessary):

I NEVER NKB GIVING ANYONE EXCELLENT SCORES - BUT THEY WERE ABOVE SATISFACTORY ON THIS PROJECT.

\*\*\*\*THIS SECTION FOR CITY USE ONLY\*\*\*\*

Verified via:	Email:	<input type="checkbox"/>	Verbal:	<input type="checkbox"/>	Mail:	<input type="checkbox"/>
Verified by:	Name:		Title:			
	Department:		Date:			

# FORM 4

## VENDOR REFERENCE FORM

City of Hollywood Solicitation #: 106-23-JJ  
Reference for: Sun Up Enterprises

Organization/Firm Name providing reference: Shawmut Design & Construction  
Organization/Firm Contact Name: David Overmyer Title: Project Executive  
Email: dovermyer@shawmut.com Phone: 754-259-4130  
Name of Referenced Project: Hilton Marina Ft. Lauderdale Contract No:  
Date Services were provided: December 2022 Project Amount: \$250,000  
Referenced Vendor's role in Project: ☐ Prime Vendor ☒ Subcontractor/ Subconsultant  
Would you use the Vendor again? ☐ Yes ☐ No. Please specify in additional comments

Description of services provided by Vendor (provide additional sheet if necessary):  
Tapping into water main on FDOT road and installing water / fire service to property

Please rate your experience with the Vendor	Need Improvement	Satisfactory	Excellent	Not Applicable
Vendor's Quality of Service				
a. Responsive	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Accuracy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Vendor's Organization:				
a. Staff expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Professionalism	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Staff turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Timeliness/Cost Control of:				
a. Project	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Deliverables	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Additional Comments (provide additional sheet if necessary):

****THIS SECTION FOR CITY USE ONLY****						
Verified via:	Email:	<input type="checkbox"/>	Verbal:	<input type="checkbox"/>	Mail:	<input type="checkbox"/>
Verified by:	Name:				Title:	
	Department:				Date:	





SUNUPEN-01

LAGUILAR

## CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

8/14/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> Collinsworth, Alter, Fowler & French, LLC 15050 NW 79th Court Suite 200 Miami Lakes, FL 33016	<b>CONTACT NAME:</b>	
	<b>PHONE (A/C, No, Ext):</b> (305) 822-7800	<b>FAX (A/C, No):</b> (305) 362-2443
<b>INSURED</b>  Sun Up Enterprises Inc 16641 Waters Edge Drive Ft Lauderdale, FL 33326	<b>E-MAIL ADDRESS:</b>	
	<b>INSURER(S) AFFORDING COVERAGE</b>	
	<b>INSURER A : Continental Insurance Company</b>	<b>NAIC #</b> 35289
	<b>INSURER B : Continental Casualty Co</b>	<b>20443</b>
	<b>INSURER C : FFVA Mutual Insurance Company</b>	<b>10385</b>
	<b>INSURER D : Federal Insurance Company</b>	<b>20281</b>
<b>INSURER E :</b>		
<b>INSURER F :</b>		

## COVERAGES

CERTIFICATE NUMBER:

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC <input type="checkbox"/> OTHER:	X		7033832145	8/12/2023	8/12/2024	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ 15,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COM/OP AGG \$ 2,000,000
B	<b>AUTOMOBILE LIABILITY</b> <input checked="" type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY			7033832131	8/12/2023	8/12/2024	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> EXCESS LIAB <input type="checkbox"/> DED <input type="checkbox"/> RETENTION \$			7033832162	8/12/2023	8/12/2024	EACH OCCURRENCE \$ 3,000,000 AGGREGATE \$ Aggregate \$ 3,000,000
C	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	WC84008017892023A	8/12/2023	8/12/2024	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
D	<b>Equipment Floater</b>			45474732	8/12/2023	8/12/2024	Scheduled Items 844,500

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)  
City of Hollywood is included as additional insured with respect to general liability and auto liability when required by written contract.

## CERTIFICATE HOLDER

## CANCELLATION

City of Hollywood  
2600 Hollywood Blvd  
Hollywood, FL 33022

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

## PROPOSAL

TO THE MAYOR AND COMMISSIONERS  
CITY OF HOLLYWOOD, FLORIDA

SUBMITTED 8/10/23

Dear Mayor and Commissioners:

The undersigned, as BIDDER, hereby declares that the only person or persons interested in the Proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this Proposal or in the Contract to be entered into; that this Proposal is made without connection with any other person, company or parties making a Bid or Proposal; and that it is in all respects fair and in good faith without collusion or fraud.

The BIDDER further declares that he has examined the site of the Work and informed himself fully in regard to all conditions pertaining to the place where the Work is to be done; that he has examined the Drawings and Specifications for the Work and contractual documents relative thereto, including the Notice to Bidders, Instructions to Bidders, Proposal Bid Form, Form of Bid Bond, Form of Contract and Form of Performance Bond, General, Supplementary and Technical Specifications, Addenda, Drawings, and Local Preference Program, Exhibit A, and has read all of the Provisions furnished prior to the opening of bids; and that he has satisfied himself relative to the work to be performed.

The undersigned BIDDER has not divulged to, discussed or compared his bid with other bidders and has not colluded with any other BIDDER of parties to this bid whatever.

If this Proposal is accepted, the undersigned BIDDER proposes and agrees to enter into and execute the Contract with the City of Hollywood, Florida, in the form of Contract specified; of which this Proposal, Instructions to Bidders, General Specifications, Supplementary Conditions and Drawings shall be made a part for the performance of Work described therein; to furnish the necessary bond equal to one hundred (100) percent of the total Contract base bid, the said bond being in the form of a Cash Bond or Surety Bond prepared on the applicable approved bond form furnished by the CITY; to furnish all necessary materials, equipment, machinery, tools, apparatus, transportation, supervision, labor and all means necessary to construct and complete the work specified in the Proposal and Contract and called for in the Drawings and in the manner specified; to commence Work on the effective date established in the "Notice to Proceed" from the ENGINEER; and to substantially complete all Contract Work within 60 days with final completion within 30 days, and stated in the "Notice to Proceed" or pay liquidated damages for each calendar day in excess thereof, or such actual and consequential damages as may result therefrom, and to abide by the Local Preference Ordinance, Exhibit A.

The BIDDER acknowledges receipt of the any and all addenda.

And the undersigned agrees that in case of failure on his part to execute the said Contract and the Bond within ten (10) days after being presented with the prescribed Contract forms, the check or Bid Bond accompanying his bid, and the money payable thereon, shall be paid into the funds of the City of Hollywood, Florida, otherwise, the check or Bid Bond accompanying this Proposal shall be returned to the undersigned.

Attached hereto is a certified check on the

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

or approved Bid Bond for the sum of

Five Percent of the total bid amount \_\_\_\_\_ Dollars (\$ 5 % ) according to the conditions under the Instructions to Bidders and provisions therein.

NOTE: If a Bidder is a corporation, the legal name of the corporation shall be set forth below, together with signature(s) of the officer or officers authorized to sign Contracts on behalf of the corporation and corporate seal; if Bidder is a partnership, the true name of the firm shall be set forth below with the signature(s) of the partner or partners authorized to sign Contracts in behalf of the partnership; and if the Bidder is an individual, his signature shall be placed below; if a partnership, the names of the general partners.

WHEN THE BIDDER IS AN INDIVIDUAL:

\_\_\_\_\_

(Signature of Individual)

\_\_\_\_\_

(Printed Name of Individual)

\_\_\_\_\_

(Address)

\*\*\*\*\*

WHEN THE BIDDER IS A SOLE PROPRIETORSHIP OR OPERATES UNDER A TRADE NAME:

\_\_\_\_\_

(Name of Firm)

\_\_\_\_\_

(Address)

\_\_\_\_\_(SEAL)  
(Signature of Individual)

\*\*\*\*\*

WHEN THE BIDDER IS A PARTNERSHIP:

\_\_\_\_\_

(Name of Firm) A Partnership

\_\_\_\_\_

(Address)

By: \_\_\_\_\_  
(SEAL)  
(Partner)

Name and Address of all Partners:

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

\*\*\*\*\*

WHEN THE BIDDER IS A JOINT VENTURE:

\_\_\_\_\_  
(Correct Name of Corporation)

By: \_\_\_\_\_ (SEAL)  
(Address)

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

As Joint Venture  
(Corporate Seal)

Organized under the laws of the State of \_\_\_\_\_, and authorized by the law to make this bid and perform all Work and furnish materials and equipment required under the Contract Documents.

\*\*\*\*\*

WHEN THE BIDDER IS A CORPORATION:

Sun Up Enterprises  
(Correct Name of Corporation)

By: [Signature]  
(SEAL)

President  
(Official Title)

11641 Waters Edge Dr. Weston, FL 33326  
(Address of Corporation)



Organized under the laws of the State of Florida, and authorized by the law to make this bid and perform all Work and furnish materials and equipment required under the Contract Documents.

CERTIFIED COPY OF RESOLUTION OF  
BOARD OF DIRECTORS

Sun Up Enterprises

(Name of Corporation)

RESOLVED that Janet Cusane

(Person Authorized to Sign)

President

(Title)

of Sun Up Enterprises

(Name of Corporation)

be authorized to sign and submit the Bid or Proposal of this corporation for the following project:

**STIRLING RD 8-INCH WATER MAIN EXTENSION**

**5146**

**Bid No. IFB-106-23-JJ**

The foregoing is a true and correct copy of the Resolution adopted by

Sun Up Enterprises

at a meeting of its Board of  
(Name of Corporation)

Directors held on the 2nd day of January, 2023.

By:

Karen Figueroa

Title:

Secretary

(SEAL)

The above Resolution MUST BE COMPLETED if the Bidder is a Corporation.

- END OF SECTION -

## Form 13

### Bid Guaranty Form

(Construction)

STATE OF FLORIDA

KNOW ALL MEN BY THESE PRESENTS:

That we Sun Up Enterprises, Inc., as Principal, and LEXINGTON NATIONAL INSURANCE CORPORATION, as

Surety, are held and firmly bound unto the City of Hollywood in the sum of \_\_\_\_\_

Five Percent of the total amount bid Dollars (\$ 5% ) lawful money

of the United States, amounting to 5% of the total SOLICITATION Price, for the payment of said sum, 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 SOLICITATION, dated August 16 2023 for

**IFB-106-23-JJ STIRLING ROAD 8-INCH WATER MAIN EXTENSION**

**Project Number 5146**

**FOR THE CITY OF HOLLYWOOD, FLORIDA (CITY)**

**SOLICITATION**

NOW, THEREFORE, if the principal shall not withdraw said SOLICITATION within 90 days after date of the same and shall within ten days after the prescribed forms are presented to him for signature, enter into a written contract with the CITY, in accordance with the SOLICITATION as accepted, and give bond with good and sufficient surety or sureties, and provide the necessary Insurance Certificates as may be required for the faithful performance and proper fulfillment of such Contract, then this obligation shall be null and void.

Approved SOLICITATION Bond

In the event of the withdrawal of said SOLICITATION within the specified period, or the failure to enter into such contract and give such bond and insurance within the specified time, the principal and the surety shall pay to the City of Hollywood the difference between the amount specified in said SOLICITATION and such larger amount for which the City of Hollywood may in good faith contract with another party to perform the work and/or supply the materials covered by said SOLICITATION.

IN WITNESS WHEREOF, the above bound parties have executed this statement under their several seals this 16  
day of August, 2023 the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

WHEN THE PRINCIPAL IS AN INDIVIDUAL:

Signed, sealed and delivered in the presence of:

\_\_\_\_\_  
Witness

\_\_\_\_\_  
NA

\_\_\_\_\_  
Signature of Individual

\_\_\_\_\_  
Address

\_\_\_\_\_  
Printed Name of Individual

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Address

Approved SOLICITATION Bond

WHEN THE PRINCIPAL IS A CORPORATION:

Attest:

Karen Figueroa  
Secretary

Sun Up Enterprises, Inc.  
Name of Corporation

16641 Waters Edge Drive  
Business Address

Weston, FL 33326

By: Janet Cusanelli  
(Affix Corporate Seal)

Janet Cusanelli  
Printed Name

President  
Official Title

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, Karen Figueroa, certify that I am the secretary of the Corporation named as Principal in the attached bond; that Janet Cusanelli who signed the said bond on behalf of the Principal, was then President of said Corporation; that I know his signature, and his signature thereto is genuine and that said bond was duly signed, sealed and attested for and on behalf of said Corporation by authority of its governing body.

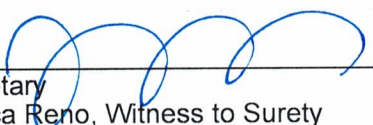
Karen Figueroa (SEAL)  
Secretary



Approved SOLICITATION Bond

TO BE EXECUTED BY CORPORATE SURETY:

Attest:

  
Secretary  
Jessica Reno, Witness to Surety

LEXINGTON NATIONAL INSURANCE CORPORATION

Corporate Surety

P.O. BOX 6098

Business Address

LUTHERVILLE, MD 21094

BY: 

(Affix Corporate Seal)



Name of Local Agency

Kevin R. Wojtowicz, Attorney-In-Fact

Attorney-in-Fact

Nielson, Wojtowicz, Neu & Associates

1000 Central Ave, Suite 200

Business Address

St. Petersburg, FL 33705

STATE OF FLORIDA

Before me, a Notary Public, duly commissioned, qualified and acting, personally appeared,

Kevin R. Wojtowicz to me well known, who being by me first duly sworn upon  
oath says that he is the attorney-in-fact for the LEXINGTON NATIONAL INSURANCE CORPORATION and

that he has been authorized by LEXINGTON NATIONAL INSURANCE CORPORATION to execute the forgoing  
bond on behalf of the CONTRACTOR named therein in favor of the City of Hollywood, Florida.

Subscribed and sworn to before me this 16 day of August, 20 23

  
Stephanie Wall, Notary Public, State of Florida

My Commission Expires: 02/25/2026

- END OF SECTION-

STEPHANIE WALL  
NOTARY PUBLIC  
STATE OF FLORIDA  
NO. HH222247  
MY COMMISSION EXPIRES FEB. 25, 2026

## POWER OF ATTORNEY

### Lexington National Insurance Corporation

Lexington National Insurance Corporation, a corporation duly organized under the laws of the State of Florida and having its principal administrative office in Baltimore County, Maryland, does hereby make, constitute and appoint:

**Charles Nielson, Edward Ward, Kevin R. Wojtowicz, Shawn Burton, Jarrett Merlucci,  
David Hoover, Michael Megahan, Brett Rosenhaus, Jessica P. Reno, Laura Mosholder**

as its true and lawful attorney-in-fact, each in their separate capacity, with full power and authority to execute, acknowledge, seal and deliver on its behalf as surety any bond or undertaking of \$6,000,000 or less. This Power of Attorney is void if used for any bond over that amount.

This Power of Attorney is granted under and by authority of the following resolutions adopted by the Board of Directors of the Company on February 15, 2018:

Be it Resolved, that the President or any Vice-President shall be and is hereby vested with full power and authority to appoint suitable persons as Attorney-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

Attorney-in-Fact may be given full power and authority for and in the name of and on the behalf of the Company, to execute, acknowledge and deliver any and all bonds, contracts, or indemnity and other conditional or obligatory undertakings, including any and all consents for the release of retained percentages and/or final estimates on engineering and construction contracts, and any all notices and documents cancelling or terminating the Company's liability thereunder and any such instruments so executed by any Attorney-in Fact shall be binding upon the Company as if signed by the President and sealed by the Corporate Secretary.

RESOLVED further, that the signature of the President or any Vice-President of LEXINGTON NATIONAL INSURANCE CORPORATION may be affixed by facsimile to any power of attorney, and the signature of the Secretary or any Assistant Secretary and the seal of the Company may be affixed by facsimile to any certificate of such power, or any such power or certificate bearing such facsimile signature or seal shall be valid and binding on the Company. Any such power so executed and sealed and certified by certificate so executed and sealed with respect to any bond to which it is attached continue to be valid and binding upon the Company.

IN WITNESS WHEREOF, the Company have caused this instrument to be signed and their corporate seal to be hereto affixed.



Ronald A. Frank, President



State of Maryland  
County of Harford County, SS:

Before me, a notary public, personally appeared, Ronald A. Frank, President of Lexington National Insurance Corporation, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

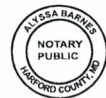
I certify under the PENALTY of PERJURY under the laws of the State of Maryland that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Commission Expires: 05/23/24



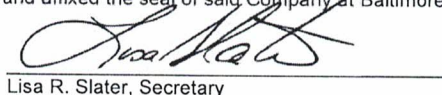
Notary



I, Lisa R. Slater, Secretary of Lexington National Insurance Corporation, do hereby certify that the above and foregoing is true and correct copy of a Power of Attorney, executed by said company, which is still in full force and effect; furthermore, the resolutions of the Boards of Directors, set out in the Power of Attorney are in full force and effect.

In Witness Whereof, I have hereunto set my hand and affixed the seal of said Company at Baltimore, Maryland this 3<sup>rd</sup> day of May, 2022.

Corporate Seal:



Lisa R. Slater, Secretary



Attached to bond signed this 16 day of August, 2023



Ron DeSantis, Governor

Melanie S. Griffin, Secretary



**STATE OF FLORIDA**  
**DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION**

**CONSTRUCTION INDUSTRY LICENSING BOARD**

THE UNDERGROUND UTILITY & EXCAVATION CO HEREIN IS CERTIFIED UNDER THE  
PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

**CUSANELLI, JANET MARIE**

SUN-UP ENTERPRISES INC  
16641 WATER EDGE DR  
WESTON FL 33326

**LICENSE NUMBER: CUC1224660**

**EXPIRATION DATE: AUGUST 31, 2024**

Always verify licenses online at [MyFloridaLicense.com](http://MyFloridaLicense.com)



Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.

# BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-831-4000

**VALID OCTOBER 1, 2022 THROUGH SEPTEMBER 30, 2023**

**DBA:**  
**Business Name:** SUN UP ENTERPRISES INC

**Receipt #:** 189-6261  
**Business Type:** ALL OTHER TYPES CONTRACTOR  
(CERT UNDERGR UTILITY & EXCAV

**Owner Name:** JANET MARIE CUSANELLI  
**Business Location:** 16641 WATERS EDGE DR  
WESTON

**Business Opened:** 12/05/2008  
**State/County/Cert/Reg:** CUC1224660  
**Exemption Code:**

**Business Phone:** 954-384-1675

Rooms

Seats

Employees

Machines

Professionals

12

For Vending Business Only						
Number of Machines:				Vending Type:		
Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
54.00	0.00	0.00	0.00	0.00	0.00	54.00

**THIS RECEIPT MUST BE POSTED CONSPICUOUSLY IN YOUR PLACE OF BUSINESS**

**THIS BECOMES A TAX RECEIPT**

**WHEN VALIDATED**

This tax is levied for the privilege of doing business within Broward County and is non-regulatory in nature. You must meet all County and/or Municipality planning and zoning requirements. This Business Tax Receipt must be transferred when the business is sold, business name has changed or you have moved the business location. This receipt does not indicate that the business is legal or that it is in compliance with State or local laws and regulations.

**Mailing Address:**

JANET MARIE CUSANELLI  
16641 WATERS EDGE DR  
WESTON, FL 33326

**Receipt #** 04B-21-00006931  
**Paid** 08/16/2022 54.00

**2022 - 2023**

**2023 FLORIDA PROFIT CORPORATION ANNUAL REPORT**

DOCUMENT# P01000029662

**Entity Name:** SUN-UP ENTERPRISES INC.

**Current Principal Place of Business:**

16641 WATERS EDGE DRIVE  
WESTON, FL 33326

**Current Mailing Address:**

16641 WATERS EDGE DRIVE  
WESTON, FL 33326

**FEI Number:** 65-1095931

**Certificate of Status Desired:** No

**Name and Address of Current Registered Agent:**

CUSANELLI, JANET  
16641 WATERS EDGE DRIVE  
WESTON, FL 33326 US

*The above named entity submits this statement for the purpose of changing its registered office or registered agent, or both, in the State of Florida.*

**SIGNATURE:**

Electronic Signature of Registered Agent

Date

**Officer/Director Detail :**

Title SDO  
Name FIGUEROA, KAREN  
Address 20401 SW 51 STREET  
City-State-Zip: FORT LAUDERDALE FL 33332

Title PTD  
Name CUSANELLI, JANET M  
Address 16641 WATERS EDGE DR  
City-State-Zip: WESTON FL 33326

*I hereby certify that the information indicated on this report or supplemental report is true and accurate and that my electronic signature shall have the same legal effect as if made under oath; that I am an officer or director of the corporation or the receiver or trustee empowered to execute this report as required by Chapter 607, Florida Statutes; and that my name appears above, or on an attachment with all other like empowered.*

**SIGNATURE:** KAREN FIGUEROA

**SECRETARY**

**03/06/2023**

Electronic Signature of Signing Officer/Director Detail

Date



# Request for Taxpayer Identification Number and Certification

► Go to [www.irs.gov/FormW9](http://www.irs.gov/FormW9) for instructions and the latest information.

Give Form to the  
requester. Do not  
send to the IRS.

Print or type.  
See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

2 Business name/disregarded entity name, if different from above

**Sun Up Enterprises, Inc.**

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

- ☐ Individual/sole proprietor or single-member LLC
- ☒ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate
- ☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ► \_\_\_\_\_
- Note:** Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.
- ☐ Other (see instructions) ► \_\_\_\_\_

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) \_\_\_\_\_

Exemption from FATCA reporting code (if any) \_\_\_\_\_

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

**16641 Waters Edge Drive**

6 City, state, and ZIP code

**Weston, FL 33326**

Requester's name and address (optional)

7 List account number(s) here (optional)

## Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

**Note:** If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

\_\_\_\_ - \_\_\_\_ - \_\_\_\_

or

Employer identification number

6 5 - 1 0 9 5 9 3 1

## Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

**Certification instructions.** You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign  
Here

Signature of  
U.S. person ►

Date ►

**8/13/23**

## General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

**Future developments.** For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to [www.irs.gov/FormW9](http://www.irs.gov/FormW9).

## Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.



OFFICE OF ECONOMIC AND SMALL BUSINESS DEVELOPMENT  
Governmental Center Annex

115 S. Andrews Avenue, Room A680 • Fort Lauderdale, Florida 33301 • 954-357-6400 • FAX 954-357-5674

May 15, 2023

Ms. Janet Cusanelli  
**SUN UP ENTERPRISES, INC.**  
16641 Waters Edge Drive  
Weston, Florida 33326

Dear Ms. Cusanelli:

The Broward County Office of Economic and Small Business Development (OESBD) is pleased to announce that your firm's **County Business Enterprise (CBE)** certification has been renewed.

**Your firm's certifications are continuing from your anniversary date but are contingent upon the firm verifying its eligibility annually through this office.** You will be notified in advance of your obligation to continue eligibility in a timely fashion. **However, the responsibility to ensure continued certification is yours.** Failure to document your firm's continued eligibility for the CBE and SBE programs within **thirty (30) days** from your anniversary may result in the expiration of your firm's certifications. Should you continue to be interested in certification after it has expired, you will need to submit a new application, and all required supporting documentation for review.

To review current Broward County Government bid opportunities, visit: [www.broward.org/Purchasing](http://www.broward.org/Purchasing) and click on "Current Solicitations and Results." Also, from this website, you can log into your firm's profile in BidSync to ensure you have added all appropriate classification codes. Bid opportunities over \$3,500 will be advertised to vendors via e-mail and according to classification codes, so please ensure that both the Purchasing Division and OESBD are apprised of your current e-mail address.

Your primary certification group is: **Construction Services**. This is also how your listing in our directory will read. You may access your firm's listing by visiting the Office of Economic and Small Business Development Directory, located on the internet at: [www.broward.org/EconDev](http://www.broward.org/EconDev) and click on "Certified Firm Directories."

Your firm may compete for, and perform work on Broward County projects in the following areas:

**NAICS CODE:** 237110, 237210, 238910

We look forward to working with you to achieve greater opportunities for your business through county procurement.

Sincerely,

SANDY-MICHAEL  
MCDONALD

Digitally signed by SANDY-  
MICHAEL MCDONALD  
Date: 2023.05.18 16:39:57  
0102

Sandy-Michael McDonald, Director  
Office of Economic and Small Business Development

**Cert Agency: BC-CBE**  
**ANNIVERSARY DATE: MAY 18<sup>TH</sup>**



SUNUPEN-01

LAGUILAR

## CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
8/14/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER  
Collinsworth, Alter, Fowler & French, LLC  
15050 NW 79th Court  
Suite 200  
Miami Lakes, FL 33016

CONTACT  
NAME:  
PHONE  
(A/C, No, Ext): (305) 822-7800 FAX (A/C, No): (305) 362-2443  
E-MAIL  
ADDRESS:

## INSURER(S) AFFORDING COVERAGE

NAIC #

INSURER A : Continental Insurance Company	35289
INSURER B : Continental Casualty Co	20443
INSURER C : FFVA Mutual Insurance Company	10385
INSURER D : Federal Insurance Company	20281
INSURER E :	
INSURER F :	

## INSURED

Sun Up Enterprises Inc  
16641 Waters Edge Drive  
Ft Lauderdale, FL 33326

## COVERAGES

## CERTIFICATE NUMBER:

## REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:	X		7033832145	8/12/2023	8/12/2024	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ 15,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COM/OP AGG \$ 2,000,000
B	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY			7033832131	8/12/2023	8/12/2024	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$			7033832162	8/12/2023	8/12/2024	EACH OCCURRENCE \$ 3,000,000 AGGREGATE \$ Aggregate \$ 3,000,000
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	WC84008017892023A	8/12/2023	8/12/2024	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
D	Equipment Floater			45474732	8/12/2023	8/12/2024	Scheduled Items 844,500

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)  
City of Hollywood is included as additional insured with respect to general liability and auto liability when required by written contract.

## CERTIFICATE HOLDER

City of Hollywood  
2600 Hollywood Blvd  
Hollywood, FL 33022

## CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE



## Form 14

### LIST OF SUBCONTRACTORS

The Respondent shall list below the name and address of each Subcontractor who will perform work under this Contract, and shall also list the portion of the work which will be done by such Subcontractor. After the opening of Submittals, changes or substitutions will be allowed with written approval of the City of Hollywood. Subcontractors must be properly licensed.

	<b>Work to be Performed</b>	<b>Subcontractor's Name / Address</b>
1.	<hr/> Milling & Resurfacing <hr/>	<hr/> Arrow Asphalt & Engineering <hr/> 3051 NW 129th St, Opa Locka, FL 33054 <hr/>
2.	<hr/> <hr/>	<hr/> <hr/>
3.	<hr/> <hr/>	<hr/> <hr/>
4.	<hr/> <hr/>	<hr/> <hr/>
5.	<hr/> <hr/>	<hr/> <hr/>
6.	<hr/> <hr/>	<hr/> <hr/>
7.	<hr/> <hr/>	<hr/> <hr/>
8.	<hr/> <hr/>	<hr/> <hr/>
9.	<hr/> <hr/>	<hr/> <hr/>
10.	<hr/> <hr/>	<hr/> <hr/>

NOTE: Attach additional sheets if required.

- END OF SECTION -

**FORM 15**

**INFORMATION REQUIRED FROM BIDDERS**

**GENERAL INFORMATION**

The Bidder shall furnish the following information. Failure to comply with this requirement may cause its rejection. Additional sheets shall be attached as required.

1. Contractor's Name/Address: Sun Up Enterprises  
16641 Waters Edge Dr., Weston, FL 33326  
\_\_\_\_\_
2. Contractor's Telephone Number: (954) 384-1675  
and e-mail address: sunupinc@aol.com  
\_\_\_\_\_
3. Contractor's License (attach copy): CUC1224660  
Primary Classification: Underground Utility and Excavation  
Broward County License Number (attach copy): \_\_\_\_\_
4. Number of years as a Contractor in construction work of the type involved in this Contract: 22 years  
\_\_\_\_\_
5. List the names and titles of all officers of Contractor's firm:  
Janet Cusanelli, President  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. Name of person who inspected site or proposed work for your firm:  
Name: Fred Asbaghi  
Date of Inspection: 7/27/23  
\_\_\_\_\_
7. What is the last project of this nature you have completed?  
Hilton Marina Ft. Lauderdale - Water Main Extension  
\_\_\_\_\_

8. Have you ever failed to complete work awarded to you; if so, where and why?

No

9. Name three individuals or corporations for which you have performed work and to which you refer:

Shawmut Design & Construction - David Overmyer (project manager), email: dovermyer@shawmut.com

Glenewinkel Construction - Grant Glenewinkel (project manager), email: gwglenewinkel@glen-co.com

Stiles Construction - Jay Laing (project manager), email: jay.laing@stiles.com

10. List the following information concerning all contracts on hand as of the date of submission of this proposal (in case of co-venture, list the information for all coventures).

Name of Project	City	Total Contract Value	Contracted Date of Completion	% Completion to Date
160 Marina Bay	Fort Lauderdale	\$312,047	October 2023	95%
District 3A STEP Area 3A-D	Dania Beach / Hollywood	\$867,008	August 2024	0%
Riverwalk Residences	Fort Lauderdale	\$1,238,691	August 2024	70%
Sailboat Circle Drainage	Weston	\$480,680	January 2024	80%

(Continue list on inset sheet, if necessary)

Town Hall Parking Lot Drainage	Southwest Ranches	\$233,369	October 2023	85%
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11. What equipment do you own that is available for the work?

Excavator, Loader, Skidsteer, Roller, Plate Compactor, Pumps, Road Plates, & Dump Truck

12. What equipment will you purchase for the proposed work?

None

13. List at least three (3) similar projects completed within the last ten (10) years by the bidder. For purposes of this requirement, 'similar' projects shall be considered to include experience with dewatering facilities, grit removal facilities,

concrete repair in WWTP headworks and gate replacement. Include owner's contact information (client's name, address, telephone number and email address), project value, completion date, reference contact information and brief project description. The determination of whether a project is sufficiently similar shall be at the sole discretion of the City and the Engineer.

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See attached projects completed list

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(Add sheets as requested.)

14. Name the Project Manager proposed for this project. Attach a copy of the project manager's resume.

Heath Figueroa

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NOTE: If requested by CITY, the Bidder shall furnish a notarized financial statement, references and other information, sufficiently comprehensive to permit an appraisal of its current financial condition.

Criteria:

- Construction of at least 3 water main projects with a total length of at least 1000 feet.
- Construction of at least 3 water main projects on a FDOT roadway

No.	Name of Water Main Project	Length of Pipe (LF)	FDOT? (Y/N)	Client Contact Information
1	John U Lloyd State Park Water Main Replacement	9,700 LF & (9) Tapping Sleeves & Valves	Y	City of Hollywood Wilhelmina Montero, email: wmontero@hollywoodfl.org P: 954-921-3930
2	Gunther Mazda SR-7 / 441	100 LF & (2) Tapping Sleeves & Valves	Y	Stiles Construction Jay Laing, email: jay.laing@stiles.com P: 954-627-9300
3	Hilton Marina Event Center Expansion Ft. Lauderdale	100 LF & (6) Tapping Sleeves & Valves	Y	Shawmut Design & Construction David Overmyer, email: dovermyer@shawmut.com P: 786-580-3243
4	FLL Westside Water Main Improvements	4,250 LF & (7) Tapping Sleeves & Valves	N	Broward County Aviation Department Carlos Hernandez, email: cahernandez@broward.org P: 954-359-1025
5	Oakland Park Multifamily Rentals	2,300 LF & (1) Tapping Sleeve & Valve	N	Ceiba Groupe Joe Samaha, email: jsamaha@ceibagroupe.com P: 954-306-6160
6	Zona West / Ultra Davie	350 LF & (4) Tapping Sleeves & Valves	N	Glenewinkel Construction Grant Glenewinkel, email: gwglenewinkel@glen-co.com P: 954-990-8091

## Projects Completed in the Past 10 Years

Project: Hilton Marina

Project Address: 1881 SE 17<sup>th</sup> St, Ft. Lauderdale

Owner (GC): Shawmut Design & Construction, 10800 Biscayne Blvd, Miami

Engineer: Flynn Engineering, 241 Commercial Blvd, Lauderdale-By-The-Sea [954-522-1004]

Project Manager: David Overmyer [786-580-3243] email: dovermyer@shawmut.com

Total amount of contract: \$1,113,777.00

Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Earthwork, Concrete, and Asphalt Restoration

Date of completion: March 2023

Project: Fire Station #4 Parking Lot Improvements

Project Address: 8200 SW 3<sup>rd</sup> St, Plantation

Owner: City of Plantation, 400 NW 73<sup>rd</sup> Ave, Plantation

Engineer: City of Plantation, 401 NW 70<sup>th</sup> Terr, Plantation

Project Manager: Samira Shalan [954-797-2282] email: sshalan@plantation.org

Total amount of contract: \$12,750.00

Description of project: Earthwork and Asphalt Restoration

Date of completion: February 2023

Project: Fire Station #5 Drainage Improvements

Project Address: 901 N Pine Island Rd, Plantation

Owner: City of Plantation, 400 NW 73<sup>rd</sup> Ave, Plantation

Engineer: City of Plantation, 401 NW 70<sup>th</sup> Terr, Plantation

Project Manager: Samira Shalan [954-797-2282] email: sshalan@plantation.org

Total amount of contract: \$122,222.00

Description of project: Installation of Drainage, Earthwork, Concrete, and Asphalt Restoration

Date of completion: January 2023

Project: Tarpon River Traffic Calming Improvements

Project Address: SW 8<sup>th</sup> Ave & SW 10<sup>th</sup> St, Ft. Lauderdale

Owner: City of Fort Lauderdale, 100 N Andrews Ave, Ft. Lauderdale

Engineer: City of Fort Laud Transportation and Mobility Department, 290 NE 3<sup>rd</sup> Ave, Ft. Laud

Project Manager: Mackendy Philippi [954-828-3707] email: mphilippi@fortlauderdale.gov

Total amount of contract: \$18,550.00

Description of project: Concrete and Sod Restoration

Date of completion: October 2022

Project: Block 40 Hollywood

Project Address: 1839 Harrison St, Hollywood

Owner (GC): Kast Construction, 701 Northpoint Parkway, Suite 400, West Palm Beach

Engineer: Craven Thompson and Associates, 3563 NW 53<sup>rd</sup> St, Ft. Lauderdale [954-739-6400]

Project Manager: Jason Kung [561-689-2910] email: jkung@kastbuild.com

Total amount of contract: \$927,220.00

Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Earthwork, Concrete, and Asphalt Restoration

Date of completion: February 2022

Project: Provence Entrance Gate  
Project Address: SW 15<sup>th</sup> Place, Davie  
Owner (GC): Davis Construction Group, 5210 SW 130<sup>th</sup> Ave, SW Ranches  
Engineer: Pillar Consultants, 5230 S University Dr Suite #104, Davie [954-680-6533]  
Project Manager: John Davis [954-689-0320] email: davisconstructiongroup@gmail.com  
Total amount of contract: \$32,000.00  
Description of project: Concrete and Asphalt Restoration  
Date of completion: February 2022

Project: Wright by the Sea (Ocean Delray Condos)  
Project Address: 1901 S Ocean Blvd, Delray Beach  
Owner (GC): Kast Construction, 701 Northpoint Parkway, Suite 400, West Palm Beach  
Engineer: Caulfield & Wheeler, 7900 Glades Rd Suite 100, Boca Raton [561-392-1991]  
Project Manager: Scott Welch [561-689-2910] email: swelch@kastbuild.com  
Total amount of contract: \$965,868.00  
Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Earthwork, Concrete, and Asphalt Restoration  
Date of completion: December 2021

Project: Pembroke Pines Emergency Sewer Repair  
Project Address: 10488 NW 3<sup>rd</sup> St, Pembroke Pines  
Owner: City of Pembroke Pines, 8300 S Palm Dr, Pembroke Pines  
Engineer: City of Pembroke Pines, 8300 S Palm Dr [954-518-9070]  
Project Manager: Armando Godoy [954-518-9070] email: agodoy@ppines.com  
Total amount of contract: \$23,850.00  
Description of project: Installation of Sanitary Sewer  
Date of completion: October 2021

Project: 912 Victoria Townhouses  
Project Address: 912 NE 4<sup>th</sup> St, Ft. Lauderdale  
Owner (GC): Moderno Development, 8163 NE 2<sup>nd</sup> Ave Suite #5, Miami  
Engineer: Gator Engineering Associates, 11390 Temple St, Cooper City [954-434-5905]  
Project Manager: Joselyn Ruiz [954-505-0800] email: joselyn@modernodev.com  
Total amount of contract: \$120,247.00  
Description of project: Earthwork, Installation of Drainage, Concrete Restoration, and Asphalt Restoration.  
Date of completion: October 2021

Project: Jack & Jill Childrens Center  
Project Address: 1315 W Broward Blvd, Ft. Lauderdale  
Owner (GC): Herman Construction Services, 10291 NW 46<sup>th</sup> St, Sunrise  
Engineer: Pillar Consultants, 5230 S University Dr Suite #104, Davie [954-680-6533]  
Project Manager: David Herman [954-749-1800] email: david@herman-construction.com  
Total amount of contract: \$644,250.00  
Description of project: Demolition, Earthwork, Installation of Drainage, Sanitary Sewer, Water & Fire Line, Concrete Restoration, Asphalt Restoration, Signage, and Striping  
Date of completion: July 2021

**Project: Gunther Mazda**

**Project Address:** 1800 S State Road 7, Ft. Lauderdale

**Owner (GC):** Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale

**Engineer:** Sun-Tech Engineering, 4577 Nob Hill Road Suite #102, Sunrise [954-777-3123]

**Project Manager:** Jay Laing [954-627-9300] email: jay.laing@stiles.com

**Total amount of contract:** \$446,690.21

**Description of project:** Earthwork, Installation of Drainage, Sanitary Sewer, Water & Fire Line, Concrete Restoration, Asphalt Restoration, Signage, and Striping

**Date of completion:** February 2021

**Project: Ultra Davie**

**Project Address:** 3890 Davie Road, Davie

**Owner (GC):** Glenewinkel Construction, 3104 S Andrews Ave, Ft. Lauderdale

**Engineer:** Pillar Consultants, 5230 S University Dr Suite #104, Davie [954-680-6533]

**Project Manager:** Grant Glenewinkel [954-990-8091] email: gwglenewinkel@glen-co.com

**Total amount of contract:** \$844,251.68

**Description of project:** Earthwork, Installation of Drainage, Sanitary Sewer, Water & Fire Line, Concrete Restoration, Asphalt Restoration, Signage, and Striping

**Date of completion:** December 2020

**Project: Parkway Christian**

**Project Address:** 1200 S Flamingo Rd, Davie

**Owner (GC):** Herman Construction Services, 10291 NW 46<sup>th</sup> St, Sunrise

**Engineer:** Pillar Consultants, 5230 S University Dr Suite #104, Davie [954-680-6533]

**Project Manager:** David Herman [954-749-1800] email: david@herman-construction.com

**Total amount of contract:** \$637,837.34

**Description of project:** Earthwork, Installation of Drainage, Sanitary Sewer, Water & Fire Line, Concrete Restoration, Asphalt Restoration, Signage, and Striping

**Date of completion:** December 2020

**Project: North Galt Shops**

**Project Address:** NE 32<sup>nd</sup> St and NE 33<sup>rd</sup> St, Ft. Lauderdale

**Owner (GC):** Sagaris Corporation, 1847 N University Dr, Coral Springs

**Engineer:** City of Fort Laud Transportation and Mobility Department, 290 NE 3<sup>rd</sup> Ave, Ft. Laud

**Project Manager:** Steven Fouladi [954-688-3407] email: steven@sagariscorp.com

**Total amount of contract:** \$88,755.45

**Description of project:** Installation of Drainage, Water, and Asphalt Restoration

**Date of completion:** December 2020

**Project: The Wave at Bayshore**

**Project Address:** 612 Bayshore Dr, Ft. Lauderdale

**Owner (GC):** Glenewinkel Construction, 3104 S Andrews Ave, Ft. Lauderdale

**Engineer:** Flynn Engineering, 241 Commercial Blvd, Lauderdale By The Sea [954-522-1004]

**Project Manager:** Bob Joy [954-990-8091] email: rjoy@glen-co.com

**Total amount of contract:** \$240,216.09

**Description of project:** Earthwork, Installation of Drainage, Sanitary Sewer, Water, Concrete Restoration, Asphalt Restoration, Signage, and Striping

**Date of completion:** September 2020



Project: Historic District Drainage Improvements  
Project Address: Misc. locations in City of Plantation  
Owner: City of Plantation, 400 NW 73<sup>rd</sup> Ave, Plantation  
Engineer: Craven Thompson and Associates, 3563 NW 53<sup>rd</sup> St, Ft. Lauderdale [954-739-6400]  
Project Manager: Don Shaver [954-739-6400] email: dshaver@craventhompson.com  
Total amount of contract: \$172,275.44  
Description of project: Installation of Drainage, Asphalt Restoration, and Sod Restoration  
Date of completion: July 2020

Project: Go Bond Roundabouts  
Project Address: NW 34<sup>th</sup> Ave / NW 9<sup>th</sup> St & NW 33<sup>rd</sup> Ave / NW 14<sup>th</sup> St, Lauderhill  
Owner: City of Lauderhill, 5581 W Oakland Park Blvd, Lauderhill  
Engineer: McMahon, 2090 Palm Beach Lakes Blvd, West Palm Beach [561-840-8650]  
Project Manager: Danyl Noel [954-730-3055] email: dnoel@lauderhill-fl.gov  
Total amount of contract: \$272,364.46  
Description of project: Installation of Roundabouts Including Asphalt Restoration, Speed Humps, Signage & Striping, RFB Installation, Concrete Restoration, and Sod Restoration  
Date of completion: June 2020

Project: SW 2<sup>nd</sup> Ave Streetscape  
Project Address: SW 2<sup>nd</sup> Ave, Ft. Lauderdale  
Owner (GC): Sagaris Corporation, 1847 N University Dr, Coral Springs  
Engineer: Calvin Giordano & Associates, 1800 Eller Dr Suite #600, Fort Laud [954-921-7781]  
Project Manager: Steven Fouladi [954-688-3407] email: steven@sagariscorp.com  
Total amount of contract: \$116,701.50  
Description of project: Installation of Drainage and Concrete Restoration  
Date of completion: April 2020

Project: Belmont Village  
Project Address: 1031 Seminole Dr, Ft. Lauderdale  
Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Flynn Engineering, 241 Commercial Blvd, Lauderdale by the Sea [954-522-1004]  
Project Manager: Ryan Fischer [954-627-9294] email: ryan.fischer@stiles.com  
Total amount of contract: \$1,201,881.70  
Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water & Fire Line, Concrete Restoration, Asphalt Restoration, Signage, and Striping  
Date of completion: April 2020

Project: Demolition of Pump Stations A-44, A-97, & C-3  
Project Address: Misc. locations in City of Ft. Lauderdale  
Owner: City of Fort Lauderdale, 100 North Andrews Ave, Ft. Lauderdale  
Engineer: City of Fort Lauderdale Public Works Dept, 100 North Andrews Ave, Ft. Lauderdale  
Project Manager: Luis Oliveira [954-828-5877] email: loliveira@fortlauderdale.gov  
Total amount of contract: \$182,300.31  
Description of project: Demo / Abandonment of Pump Stations and Installation of Sanitary Sewer, and Sod Restoration  
Date of completion: November 2019

Project: Rick Case Weston Access Road  
Project Address: 3520 Weston Rd, Weston  
Owner (GC): Bergeron Land Development, 19612 SW 69<sup>th</sup> Pl, Ft. Lauderdale  
Engineer: Winningham and Fradley Inc., 111 NE 44<sup>th</sup> Street, Oakland Park, [954-771-7440]  
Project Manager: Brian Thomason [954-680-6100] email: bthomason@bergeroninc.com  
Total amount of contract: \$81,627.66  
Description of project: Selective Demolition, Concrete Restoration, and Asphalt Restoration  
Date of completion: April 2020

Project: NE 30<sup>th</sup> Ave Drainage Improvements  
Project Address: 3448 NE 30<sup>th</sup> Ave, Lighthouse Point  
Owner: City of Lighthouse Point, 2200 NE 38<sup>th</sup> St, Lighthouse Point  
Engineer: Winningham and Fradley Inc., 111 NE 44<sup>th</sup> Street, Oakland Park, [954-771-7440]  
Project Manager: Charles Schramm [954-946-7386] email: cschramm@lighthousepoint.com  
Total amount of contract: \$6,450.00  
Description of project: Drainage Modifications and Asphalt Restoration  
Date of completion: November 2019

Project: US Cold Storage  
Project Address: 11801 NW 102<sup>nd</sup> Rd, Medley  
Owner (GC): Siteworks Inc., 21346 St. Andrews Blvd #305, Boca Raton  
Engineer: Primus Builders, 8294 Highway 92 #210, Woodstock [707-928-7120]  
Project Manager: Gary Bal [561-235-9575] email: gary.siteworksinc@gmail.com  
Total amount of contract: \$130,303.26  
Description of project: Earthwork, Installation of Drainage, and Concrete  
Date of completion: September 2019

Project: Port Everglades Terminal 4  
Project Address: 2050 Eisenhower Blvd, Ft. Lauderdale  
Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Cartaya & Associates, 2400 E Commercial Blvd, Ft. Lauderdale [954-771-2724]  
Project Manager: Steve Sjoblom [954-627-9150] email: steve.sjoblom@stiles.com  
Total amount of contract: \$651,357.45  
Description of project: Selective Demolition and Earthwork  
Date of completion: May 2019

Project: One20Fourth  
Project Address: 124 NE 4th St, Ft. Lauderdale  
Owner (GC): Siteworks Inc., 21346 St. Andrews Blvd #305, Boca Raton  
Engineer: Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud [954-568-0757]  
Project Manager: Gary Bal [954-931-5105] email: gary.siteworksinc@gmail.com  
Total amount of contract: \$525,408.54  
Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water & Fire, Concrete Restoration, Asphalt Restoration, Signage, and Striping  
Date of completion: April 2019

Project: Oceanside Townhomes

Project Address: 951 Sweetwater Lane, Boca Raton

Owner (GC): CJM Communities, 9825 Marina Blvd Suite #100, Boca Raton

Engineer: Shah Drotos, 3410 North Andrews Ave, Pompano Beach, [954-943-9433]

Project Manager: Charlie Lewis [561-488-9509] email: charlie@cjmcommunities.com

Total amount of contract: \$183,303.95

Description of project: Installation of Drainage, Sanitary Sewer, and Water Line

Date of completion: February 2019

Project: Sunrise Nova Dr Water Main and Force Main Improvements

Project Address: Nova Dr and SW 8<sup>th</sup> Ave, Davie

Owner: City of Sunrise, 10770 W Oakland Park Blvd, Sunrise

Engineer: Arcadis, 8201 Peters Rd Suite #3400, Plantation [954-761-3460]

Project Manager: Guarionex De Los Santos [954-888-6077] email: gdelossantos@sunrisefl.gov

Total amount of contract: \$2,103,434.05

Description of project: Installation of Sanitary Sewer / Force Main, Water Main, Abandonment of Existing Utilities, Concrete Restoration, Asphalt Restoration, and Sod Restoration

Date of completion: 2019

Project: 501 E Las Olas Blvd

Project Address: 501 E Las Olas Blvd, Ft. Lauderdale

Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale

Engineer: McLaughlin Engineering Company, 1700 NW 64<sup>th</sup> St Suite 400, Ft. Lauderdale

Project Manager: Jessica Quintana [954-627-9294] email: jessica.quintana@stiles.com

Total amount of contract: \$344,145.29

Description of project: Installation of Drainage, Sanitary Sewer, Water & Fire Line, Concrete, and Asphalt Restoration

Date of completion: December 2018

Project: JM Lexus Margate Phase 2

Project Address: 5250 W Sample Road, Margate

Owner: JM Family Enterprises, 111 Jim Moran Blvd, Deerfield Beach

Engineer: Shah Drotos, 3410 North Andrews Ave. Ext, Pompano Beach, [954-943-9433]

Project Manager: Dennis Arserio [954-590-5105] email: dennis.arserio@jmfamil.com

Total amount of contract: \$49,362.76

Description of project: Installation of Drainage, Concrete Restoration, and Site Restoration

Date of completion: November 2018

Project: Weston Health Park

Project Address: 1495 N Park Dr, Weston

Owner: Jaffer Realty, 3410 Stallion Lane, Weston

Engineer: Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud, [954-568-0757]

Project Manager: Shalina Jaffer [954-240-8780] email: shalina.jaffer@gmail.com

Total amount of contract: \$273,007.51

Description of project: Earthwork, Installation of Drainage, Water & Fire Line, Concrete, Asphalt Restoration, and Striping

Date of completion: October 2018

**Project: Hollywood Circle**

**Project Address:** 1740 Polk St, Hollywood

**Owner (GC):** Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale

**Engineer:** Craven Thompson and Associates, 3563 NW 53rd St, Ft. Lauderdale [954-739-6400]

**Project Manager:** Michael Bator [954-627-9300] email: michael.bator@stiles.com

**Total amount of contract:** \$999,829.80

**Description of project:** Demolition, Earthwork, Installation of Drainage, Sanitary Sewer, Water / Fire Line, Concrete Restoration, Asphalt Restoration, Signage, and Striping

**Date of completion:** October 2018

**Project: Landmark Bank**

**Project Address:** 707 SE 3rd Ave, Ft. Lauderdale

**Owner:** Third Avenue Limited Partnership, 707 SE 3<sup>rd</sup> Ave Suite #400, Ft. Lauderdale

**Engineer:** Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud [954-568-0757]

**Project Manager:** Philip Disque [954-764-4500] email: pdisque@pdcpa.net

**Total amount of contract:** \$137,669.45

**Description of project:** Installation of Water & Fire Line, Concrete Restoration, Asphalt Restoration, Signage, and Striping

**Date of completion:** May 2018

**Project: Hollywood Drainage Improvements for Alleys South of Hollywood Blvd**

**Project Address:** Alleys South of Hollywood Blvd, between 22nd and 26th Avenues

**Owner:** City of Hollywood, 2600 Hollywood Blvd, Hollywood

**Engineer:** Dept of Public Utilities Engineering, 1621 N 14th Ave, Hollywood [954-921-3930]

**Project Manager:** Raul Wainer [954-921-3930] email: rwainer@hollywoodfl.org

**Engineering Manager:** Clece Aurelus [954-921-3995] email: caurelus@hollywoodfl.org

**Total amount of contract:** \$279,483.86

**Description of project:** Installation of Drainage and Asphalt Restoration

**Date of completion:** April 2018

**Project: Paramount**

**Project Address:** 700 N Ft. Lauderdale Beach Blvd, Ft. Lauderdale

**Owner (GC):** Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale

**Engineer:** Flynn Engineering, 241 Commercial Blvd, Lauderdale By The Sea [954-522-1004]

**Project Manager:** Steve Sjoblom [954-627-9150] email: steve.sjoblom@stiles.com

**Total amount of contract:** \$887,616.77

**Description of project:** Earthwork, Installation of Drainage, Sanitary Sewer, Water & Fire Line, Concrete, Asphalt Restoration, Signage, and Striping

**Date of completion:** March 2018

**Project: Colee Hammock Traffic Calming Improvements**

**Project Address:** SE 12th Ave, 13th Ave, 16th Ave, and 17th Ave between Broward Blvd and Las Olas Blvd

**Owner:** City of Fort Lauderdale, 100 North Andrews Ave, Ft. Lauderdale

**Engineer:** City of Fort Laud Transportation and Mobility Department, 290 NE 3rd Ave, Ft. Laud

**Project Manager:** Catherine Prince [954-828-3794] email: cprince@fortlauderdale.gov

**Total amount of contract:** \$198,181.00

**Description of project:** Drainage, Sod Restoration, Concrete, Asphalt Restoration, Signage and Striping

**Date of completion:** 2018

Project: Sunrise NW 25th Court Roadway Improvements

Project Address: NW 25th Ct between NW 99th Terr and NW 89th Ave, Sunrise

Owner: City of Sunrise, 10770 W Oakland Park Blvd, Sunrise

Engineer: Arcadis, 8201 Peters Rd Suite #3400, Plantation [954-761-3460]

Project Manager: Bob Romeo [954-888-6060] email: rromeo@sunrisefl.gov

Total amount of contract: \$129,682.59

Description of project: Concrete Restoration, Asphalt Restoration, Signage and Striping, and Sod Restoration

Date of completion: 2018

Project: Wilton Manors NE 23rd Drive Parking Lot

Project Address: NE 23rd Drive and NE 11th Ave, Wilton Manors

Owner: City of Wilton Manors, 2020 Wilton Drive, Wilton Manors

Engineer: Chen Moore and Associates, 500 West Cypress Creek Road, Ft. Laud [954-730-0707]

Project Manager: David Archacki [954-390-2190] email: darchacki@wiltonmanors.com

Total amount of contract: \$255,000.00

Description of project: Installation of Drainage, Irrigation, Landscape, Electrical, Concrete, Asphalt Restoration, Signage, and Striping

Date of completion: 2018

Project: MODS

Project Address: 401 SW 2nd Street, Ft. Lauderdale

Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale

Engineer: Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud, [954-568-0757]

Project Manager: Jay Laing [954-627-9300] email: jay.laing@stiles.com

Total amount of contract: \$149,416.00

Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, and Concrete

Date of completion: December 2017

Project: JM Lexus Margate P1

Project Address: 5250 W Sample Road, Margate

Owner: JM Family Enterprises, 111 Jim Moran Blvd, Deerfield Beach

Engineer: Shah Drotos, 3410 North Andrews Ave, Pompano Beach, [954-943-9433]

Project Manager: Matt Giani [954-943-9433] email: mattgiani@shahdrotos.com

Total amount of contract: \$37,550.50

Description of project: Concrete, Sod Restoration, Signage and Striping

Date of completion: December 2017

Project: Hollywood Lift Station E-8 Force Main Replacement

Project Address: 800 Three Islands Blvd and NE 11th St, Hollywood

Owner: City of Hollywood, 2600 Hollywood Blvd, Hollywood

Engineer: Dept of Public Utilities Engineering, 1621 N 14th Ave, Hollywood [954-921-3930]

Project Manager: Jose Polanco [954-921-3930] email: jpolanco@hollywoodfl.org

Engineering Manager: Clece Aurelus [954-921-3995] email: caurelus@hollywoodfl.org

Total amount of contract: \$146,675.00

Description of project: Lift Station Renovation, Sanitary Sewer, Concrete Restoration, and Site Restoration

Date of completion: August 2017

Project: Hollywood Monroe Terrace Sewer Expansion  
Project Address: Monroe Terrace and South Dixie Hwy, Hollywood  
Owner: City of Hollywood, 2600 Hollywood Blvd, Hollywood  
Engineer: Dept of Public Utilities Engineering, 1621 N 14th Ave, Hollywood [954-921-3930]  
Project Manager: Vernal Sibble [954-921-3930] email: vsibble@hollywoodfl.org  
Engineering Manager: Clece Aurelus [954-921-3995] email: caurelus@hollywoodfl.org  
Total amount of contract: \$104,413.00  
Description of project: Installation of Sanitary Sewer, Asphalt Restoration, and Striping  
Date of completion: May 2017

Project: Dominion Storage  
Project Address: 5185 Coconut Creek Parkway, Margate  
Owner (GC): Siteworks Inc., 21346 St. Andrews Blvd #305, Boca Raton  
Engineer: Shah Drotos, 3410 North Andrews Ave, Pompano Beach, [954-943-9433]  
Project Manager: Gary Bal [954-931-5105] email: gary.siteworksinc@gmail.com  
Total amount of contract: \$231,188.00  
Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water Main, and Concrete  
Date of completion: May 2017

Project: 500 Building  
Project Address: 500 Jim Moran Blvd, Deerfield Beach  
Owner (GC): Shah Drotos, 3410 North Andrews Ave, Pompano Beach  
Engineer: Shah Drotos, 3410 North Andrews Ave, Pompano Beach, [954-943-9433]  
Project Manager: Matthew Giani [954-943-9433] email: mattgiani@shahdrotos  
Total amount of contract: \$73,390.44  
Description of project: Installation of Drainage and Asphalt Restoration  
Date of completion: March 2017

Project: Plantation Acres Drainage Improvements  
Project Address: Misc. NW 22<sup>nd</sup> St, NW 116h Ave, Plantation Acres  
Owner: Plantation Acres Improvement District, 1701 NW 112<sup>th</sup> Avenue, Plantation  
Engineer: Winningham and Fradley Inc., 111 NE 44<sup>th</sup> St, Oakland Park, [954-771-7440]  
Project Manager: Angel Alvarez [954-474-3092] email: angel\_alvarez@paidfl.org  
Total amount of contract: \$324,030.00  
Description of project: Installation of Drainage, Concrete, Site Restoration, and Asphalt Restoration  
Date of completion: January 2017

Project: Memorial Regional Hospital  
Project Address: 3501 Johnson St, Hollywood  
Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Miller Legg, 5747 N Andrews Way, Ft. Lauderdale [954-436-7000]  
Project Manager: Eric Pedrick [954-914-6402] email: eric.pedrick@stiles.com  
Total amount of contract: \$1,622,544.00  
Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Lift Station, Water / Fire Line, Concrete, Asphalt, and Striping  
Date of completion: 2017

Project: SW 8th St Sanitary Sewer Improvements  
Project Address: SW 8th St, Ft. Lauderdale  
Owner: City of Fort Lauderdale, 100 North Andrews Ave, Ft. Lauderdale  
Engineer: Keith and Schnars, 6500 North Andrews Ave, Ft. Lauderdale, [954-776-1616]  
Project Manager: Omar Castellon [954-828-5064] email: ocastellon@fortlauderdale.gov  
Total amount of contract: \$273,171.00  
Description of project: Installation of Sanitary Sewer, Water Main, and Asphalt Restoration  
Date of completion: 2017

Project: Colony West Golf Course Maintenance Facility Improvements  
Project Address: 8200 W McNab Road, Tamarac  
Owner: City of Tamarac, 7525 NW 88th Ave, Tamarac  
Engineer: City of Tamarac Engineering Division, 6011 Nob Hill Rd, Tamarac [954-597-3706]  
Project Manager: Bryan Farrow [954-597-3704] email: bryan.farrow@tamarac.org  
Total amount of contract: \$196,711.00  
Description of project: Installation of Force Main, Directional Bore, Sewer Laterals, Lift Station, Electrical, Concrete, Asphalt Restoration, and Striping  
Date of completion: December 2016

Project: Doral Kia Temporary Showroom  
Project Address: 10155 NW 12th Street, Doral  
Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Camero & Associates, Inc, 7400 SW 50th Terr Suite 204, Miami, [305-665-7602]  
Project Manager: Jay Laing [954-627-9300] email: jay.laing@stiles.com  
Total amount of contract: \$250,676.00  
Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water Main, Concrete, Asphalt, and Striping  
Date of completion: October 2016

Project: Animal Care Facility  
Project Address: 2400 SW 42nd Street, Ft. Lauderdale  
Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud, [954-568-0757]  
Project Manager: Eric Pedrick [954-914-6402] email: eric.pedrick@stiles.com  
Total amount of contract: \$961,665.00  
Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water / Fire Line, Concrete, and Striping  
Date of completion: June 2016

Project: 8th Ave Residences  
Project Address: 215 SE 8th Ave, Ft. Lauderdale  
Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud, [954-568-0757]  
Project Manager: Joe Darnaby (no longer with Stiles)  
Total amount of contract: \$785,963.00  
Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water / Fire, Concrete, Asphalt, and Signage  
Date of completion: April 2016

Project: Bel Lago  
Project Address: 5401 Wiles Road, Coconut Creek  
Owner (GC): Altman Construction, 1515 South Federal Hwy Suite #300, Boca Raton  
Engineer: HSQ Group, 1489 W Palmetto Park Rd Suite 340, Boca Raton [561-392-0221]  
Project Manager: Rob Gillette [954-444-6782] email: rgillette@altmancos.com  
Total amount of contract: \$2,327,363.57  
Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Earthwork, Concrete, and Asphalt Restoration  
Date of completion: 2016

Project: Hallandale Beach 40th Year Public Works CDBG  
Project Address: NW 8th Ave and 4th / 5th Street  
Owner: City of Hallandale Beach, 400 South Federal Hwy, Hallandale Beach  
Engineer: Craven Thompson and Associates, 3563 NW 53rd St, Ft. Lauderdale [954-739-6400]  
Project Manager: Cecilia Espejo [954-457-1607] email: mespejo@cohb.org  
Total amount of contract: \$106,999.00  
Description of project: Installation of Drainage, Concrete Restoration, Asphalt Restoration, Sod Restoration, and Striping  
Date of completion: 2016

Project: Traffic Circle at N 13th Avenue and Tyler Street  
Project Address: N 13th Ave and Tyler St, Hollywood  
Owner: City of Hollywood, 1621 N 14th Ave, Hollywood  
Engineer: Dept of Public Works Engineering & Architectural Services [954-921-3900]  
Project Manager: Clarissa Ip [954-921-3915] email: cip@hollywoodfl.org  
Total amount of contract: \$142,616.05  
Description of project: Installation of Concrete and Asphalt Restoration  
Date of completion: 2016

Project: FLL Westside Water Main Improvements  
Project Address: W Perimeter Rd and SW 43rd St, Ft. Lauderdale  
Owner: Broward County Aviation Department, 2200 SW 4th St Suite #101, Dania Beach  
Engineer: EAC Consulting, Inc., 815 NW 57th Ave Suite #402, Miami [305-265-5460]  
Project Manager: Carlos Hernandez [954-359-1025] email: cahernandez@broward.org  
Total amount of contract: \$1,730,732.00  
Description of project: Installation of Water Main, Concrete, Asphalt Restoration, Striping, and Sod Restoration  
Date of completion: December 2015

Project: iPic Theater  
Project Address: 3701 NE 163rd St, Miami  
Owner (GC): Stiles Construction, 301 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Hodges & Associates, 13642 Omega Rd, Dallas, Texas [972-387-1000]  
Project Manager: David Veit [954-524-6617] email: david.veil@stiles.com  
Total amount of contract: \$46,246.00  
Description of project: Installation of Concrete, Asphalt Restoration / Sealcoating, and Striping  
Date of completion: December 2015



Project: 1 West Las Olas

Project Address: 1 W Las Olas Blvd, Ft. Lauderdale

Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale

Engineer: Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud, [954-568-0757]

Project Manager: Jessica Quintana [954-627-9294] email: jessica.quintana@stiles.com

Total amount of contract: \$186,921.00

Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Concrete, and Asphalt Restoration

Date of completion: November 2015

Project: John U Lloyd State Park Water Main Replacement

Project Address: 6503 North Ocean Dr, Dania Beach

Owner: City of Hollywood, 1621 North 14th Ave, Hollywood

Engineer: Craven Thompson and Associates, 3563 NW 53rd St, Ft. Lauderdale [954-739-6400]

Project Manager: Wilhelmina Montero [954-921-3930] email: wmontero@hollywoodfl.org

Total amount of contract: \$1,650,767.00

Description of project: Installation of Water Main, Directional Drill, Asphalt Restoration, Striping and Sod Restoration.

Date of completion: October 2015

Project: Audi Ft. Lauderdale

Project Address: 1200 N Federal Hwy, Ft. Lauderdale

Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale

Engineer: Spring Engineering, 3014 U.S. Hwy 19, Holiday [727-938-1516]

Project Manager: Joseph Spence [954-627-9300] email: joseph.spence@stiles.com

Total amount of contract: \$572,940.00

Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water / Fire Line, Concrete, and Asphalt Restoration

Date of completion: October 2015

Project: Broward County Aviation Maintenance Facility

Project Address: 3399 SW 2<sup>nd</sup> Ave, Ft. Lauderdale

Owner (GC): Morganti Group, 1450 Centerpark Blvd Suite #260, West Palm Beach

Engineer: Keith & Associates, 301 E Atlantic Blvd, Pompano Beach [954-788-3400]

Project Manager: Mike Buckland [772-785-5700] email: mbuckland@morganti.com

Total amount of contract: \$1,806,904.72

Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water Line, Concrete, and Asphalt Restoration

Date of completion: March 2015

Project: NE 5th Ave Drainage Improvements

Project Address: NE 5th Ave, Oakland Park

Owner: City of Oakland Park, 5399 North Dixie Hwy, Oakland Park

Engineer: AECOM, 7800 Congress Ave Suite 200, Boca Raton [561-994-6500]

Project Manager: Ronald Desbrunes [954-630-4482] email: ronaldd@oaklandparkfl.gov

Total amount of contract: \$321,037.00

Description of project: Earthwork, Installation of Drainage, Asphalt Restoration, and Sod Restoration

Date of completion: 2015

Project: Sea Ranch Lakes Beach Club  
Project Address: 5300 N Ocean Dr, Sea Ranch Lakes  
Owner: Amerity Group, 5300 N Ocean Dr, Sea Ranch Lakes  
Engineer: Ballbe & Associates, 2737 NE 30<sup>th</sup> Pl, Ft. Lauderdale [954-491-7788]  
Project Manager: John Stockamore [954-491-0100] email: ameritygroup@bellsouth.net  
Total amount of contract: \$100,885.00  
Description of project: Earthwork, Concrete, and Paver Restoration  
Date of completion: December 2014

Project: 3A Force Main  
Project Address: Ravenswood Rd and SW 42nd St, Dania Beach  
Owner: Broward County Water and Wastewater Services, 2555 W Copans Rd, Pompano Beach  
Engineer: Craven Thompson and Associates, 3563 NW 53rd St, Ft. Lauderdale [954-739-6400]  
Project Manager: John Morra [954-831-0902] email: jmorra@broward.org  
Total amount of contract: \$1,341,051.65  
Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Earthwork, Concrete, and Asphalt Restoration  
Date of completion: 2014

Project: Paseo del Mar  
Project Address: 1600 E Sunrise Blvd, Ft. Lauderdale  
Owner (GC): Stiles Construction, 301 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Flynn Engineering, 241 Commercial Blvd, Lauderdale by the Sea [954-522-1004]  
Project Manager: Ian Schwartz [954-627-9229] email: ian.schwartz@stiles.com  
Total amount of contract: \$963,169.00  
Description of project: Installation of Drainage, Sanitary Sewer, Water Main, Concrete, Asphalt, and Striping  
Date of completion: 2014

Project: Hallandale Beach Misc. Drainage Improvements  
Project Address: NW 2nd St and NW 6th Ave, Hallandale Beach  
Owner: City of Hallandale Beach, 400 South Federal Hwy, Hallandale Beach  
Engineer: Eisman and Russo, 6455 Powers Ave, Jacksonville [904-733-1478]  
Project Manager: Beatriz Alvarez [954-457-3040] email: balvarez@cohb.org  
Total amount of contract: \$235,315.00  
Description of project: Installation of Drainage, Concrete, Asphalt Restoration, Striping and Signage  
Date of completion: 2014

Project: Broward County Courthouse Parking Garage  
Project Address: 612 S Andrews Ave, Ft. Lauderdale  
Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud [954-568-0757]  
Project Manager: Steve Sjoblom [954-627-9150] email: steve.sjoblom@stiles.com  
Total amount of contract: \$1,052,499.00  
Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Earthwork, Concrete, and Asphalt Restoration  
Date of completion: August 2013

Project: Port Everglades Terminals 2, 19, 21, & 26 Improvements

Project Address: 2019 Eller Dr, Hollywood

Owner (GC): Moss & Associates, 2101 N Andrews Ave Suite #300, Ft. Lauderdale

Engineer: CRA Engineering, 6941 SW 196<sup>th</sup> Ave Suite 28, Pembroke Pines [954-880-0180]

Project Manager: Dick Slater [954-769-8200] email: dslater@mossemail.com

Total amount of contract: \$343,877.00

Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Earthwork, Concrete, and Asphalt Restoration

Date of completion: November 2012

Project: Traffic Calming Improvements

Project Address: Sutton Rd & SW 59th Terr, Harvard Rd & Sutton Rd, West Park

Owner: City of West Park, 1965 S State Road 7, West Park

Engineer: Kimley Horn and Associates Inc, 5200 NW 33rd Ave, Ft Laud [954-535-5100]

Project Manager: Dan Millien [954-964-0284] email: dmillien@cityofwestpark.org

Total amount of contract: \$121,545.74

Description of project: Earthwork, Concrete, Asphalt Restoration, Striping and Signage

Date of completion: July 2012

Project: Center Court Condo

Project Address: SW 59th Court, Davie

Owner (GC): City of Sunrise, 10770 W Oakland Park Blvd, Sunrise

Engineer: Hazen and Sawyer, 4000 Hollywood Blvd #750N, Hollywood [954-987-0066]

Project Manager: Bob Romeo [954-888-6060] email: rromeo@sunrisefl.gov

Total amount of contract: \$673,153.07

Description of project: Installation of Sanitary Sewer, Water Line, Earthwork, Concrete, and Asphalt Restoration

Date of completion: January 2012

Project: Deerfield Beach Pier

Project Address: Ocean Way & NE 2<sup>nd</sup> St, Deerfield Beach

Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale

Engineer: Caulfield & Wheeler, 7900 Glades Rd Suite 100, Boca Raton [561-392-1991]

Project Manager: Jay Laing [954-627-9300] email: jay.laing@stiles.com

Total amount of contract: \$283,157.00

Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Concrete, and Asphalt Restoration

Date of completion: 2012

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Heath Figueroa  
20401 SW 51<sup>st</sup> Street  
Ft. Lauderdale, FL 33332  
(954) 806-5656  
Heathfigueroa82@hotmail.com

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## CERTIFICATIONS

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- OSHA 30 Hour
- CPR/First Aid/ AED
- Intermediate MOT

## EMPLOYMENT

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2009- Current **Superintendent**      **Sun Up Enterprises, Inc.**      **Ft. Lauderdale, FL**

- Perform Take Offs
- Establish Relationships with Vendors & Suppliers
- Oversee Maintenance & Services Repairs on Heavy and Small Equipment
- Operate Heavy Machinery
- Supervise Pipe Crew
- Supervise Earthwork Crew
- Monitor Change Orders

**References available upon request**

## Projects Completed in the Past 10 Years

Project: Hilton Marina

Project Address: 1881 SE 17<sup>th</sup> St, Ft. Lauderdale

Owner (GC): Shawmut Design & Construction, 10800 Biscayne Blvd, Miami

Engineer: Flynn Engineering, 241 Commercial Blvd, Lauderdale-By-The-Sea [954-522-1004]

Project Manager: David Overmyer [786-580-3243] email: dovermyer@shawmut.com

Total amount of contract: \$1,113,777.00

Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Earthwork, Concrete, and Asphalt Restoration

Date of completion: March 2023

Project: Fire Station #4 Parking Lot Improvements

Project Address: 8200 SW 3<sup>rd</sup> St, Plantation

Owner: City of Plantation, 400 NW 73<sup>rd</sup> Ave, Plantation

Engineer: City of Plantation, 401 NW 70<sup>th</sup> Terr, Plantation

Project Manager: Samira Shalan [954-797-2282] email: sshalan@plantation.org

Total amount of contract: \$12,750.00

Description of project: Earthwork and Asphalt Restoration

Date of completion: February 2023

Project: Fire Station #5 Drainage Improvements

Project Address: 901 N Pine Island Rd, Plantation

Owner: City of Plantation, 400 NW 73<sup>rd</sup> Ave, Plantation

Engineer: City of Plantation, 401 NW 70<sup>th</sup> Terr, Plantation

Project Manager: Samira Shalan [954-797-2282] email: sshalan@plantation.org

Total amount of contract: \$122,222.00

Description of project: Installation of Drainage, Earthwork, Concrete, and Asphalt Restoration

Date of completion: January 2023

Project: Tarpon River Traffic Calming Improvements

Project Address: SW 8<sup>th</sup> Ave & SW 10<sup>th</sup> St, Ft. Lauderdale

Owner: City of Fort Lauderdale, 100 N Andrews Ave, Ft. Lauderdale

Engineer: City of Fort Laud Transportation and Mobility Department, 290 NE 3<sup>rd</sup> Ave, Ft. Laud

Project Manager: Mackendy Philippi [954-828-3707] email: mphilippi@fortlauderdale.gov

Total amount of contract: \$18,550.00

Description of project: Concrete and Sod Restoration

Date of completion: October 2022

Project: Block 40 Hollywood

Project Address: 1839 Harrison St, Hollywood

Owner (GC): Kast Construction, 701 Northpoint Parkway, Suite 400, West Palm Beach

Engineer: Craven Thompson and Associates, 3563 NW 53rd St, Ft. Lauderdale [954-739-6400]

Project Manager: Jason Kung [561-689-2910] email: jkung@kastbuild.com

Total amount of contract: \$927,220.00

Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Earthwork, Concrete, and Asphalt Restoration

Date of completion: February 2022

Project: Provence Entrance Gate  
Project Address: SW 15<sup>th</sup> Place, Davie  
Owner (GC): Davis Construction Group, 5210 SW 130<sup>th</sup> Ave, SW Ranches  
Engineer: Pillar Consultants, 5230 S University Dr Suite #104, Davie [954-680-6533]  
Project Manager: John Davis [954-689-0320] email: davisconstructiongroup@gmail.com  
Total amount of contract: \$32,000.00  
Description of project: Concrete and Asphalt Restoration  
Date of completion: February 2022

Project: Wright by the Sea (Ocean Delray Condos)  
Project Address: 1901 S Ocean Blvd, Delray Beach  
Owner (GC): Kast Construction, 701 Northpoint Parkway, Suite 400, West Palm Beach  
Engineer: Caulfield & Wheeler, 7900 Glades Rd Suite 100, Boca Raton [561-392-1991]  
Project Manager: Scott Welch [561-689-2910] email: swelch@kastbuild.com  
Total amount of contract: \$965,868.00  
Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Earthwork, Concrete, and Asphalt Restoration  
Date of completion: December 2021

Project: Pembroke Pines Emergency Sewer Repair  
Project Address: 10488 NW 3<sup>rd</sup> St, Pembroke Pines  
Owner: City of Pembroke Pines, 8300 S Palm Dr, Pembroke Pines  
Engineer: City of Pembroke Pines, 8300 S Palm Dr [954-518-9070]  
Project Manager: Armando Godoy [954-518-9070] email: agodoy@ppines.com  
Total amount of contract: \$23,850.00  
Description of project: Installation of Sanitary Sewer  
Date of completion: October 2021

Project: 912 Victoria Townhouses  
Project Address: 912 NE 4<sup>th</sup> St, Ft. Lauderdale  
Owner (GC): Moderno Development, 8163 NE 2<sup>nd</sup> Ave Suite #5, Miami  
Engineer: Gator Engineering Associates, 11390 Temple St, Cooper City [954-434-5905]  
Project Manager: Joselyn Ruiz [954-505-0800] email: joselyn@modernodev.com  
Total amount of contract: \$120,247.00  
Description of project: Earthwork, Installation of Drainage, Concrete Restoration, and Asphalt Restoration.  
Date of completion: October 2021

Project: Jack & Jill Children's Center  
Project Address: 1315 W Broward Blvd, Ft. Lauderdale  
Owner (GC): Herman Construction Services, 10291 NW 46<sup>th</sup> St, Sunrise  
Engineer: Pillar Consultants, 5230 S University Dr Suite #104, Davie [954-680-6533]  
Project Manager: David Herman [954-749-1800] email: david@herman-construction.com  
Total amount of contract: \$644,250.00  
Description of project: Demolition, Earthwork, Installation of Drainage, Sanitary Sewer, Water & Fire Line, Concrete Restoration, Asphalt Restoration, Signage, and Striping  
Date of completion: July 2021

**Project: Gunther Mazda**

**Project Address:** 1800 S State Road 7, Ft. Lauderdale

**Owner (GC):** Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale

**Engineer:** Sun-Tech Engineering, 4577 Nob Hill Road Suite #102, Sunrise [954-777-3123]

**Project Manager:** Jay Laing [954-627-9300] email: jay.laing@stiles.com

**Total amount of contract:** \$446,690.21

**Description of project:** Earthwork, Installation of Drainage, Sanitary Sewer, Water & Fire Line, Concrete Restoration, Asphalt Restoration, Signage, and Striping

**Date of completion:** February 2021

**Project: Ultra Davie**

**Project Address:** 3890 Davie Road, Davie

**Owner (GC):** Glenewinkel Construction, 3104 S Andrews Ave, Ft. Lauderdale

**Engineer:** Pillar Consultants, 5230 S University Dr Suite #104, Davie [954-680-6533]

**Project Manager:** Grant Glenewinkel [954-990-8091] email: gwglenewinkel@glen-co.com

**Total amount of contract:** \$844,251.68

**Description of project:** Earthwork, Installation of Drainage, Sanitary Sewer, Water & Fire Line, Concrete Restoration, Asphalt Restoration, Signage, and Striping

**Date of completion:** December 2020

**Project: Parkway Christian**

**Project Address:** 1200 S Flamingo Rd, Davie

**Owner (GC):** Herman Construction Services, 10291 NW 46<sup>th</sup> St, Sunrise

**Engineer:** Pillar Consultants, 5230 S University Dr Suite #104, Davie [954-680-6533]

**Project Manager:** David Herman [954-749-1800] email: david@herman-construction.com

**Total amount of contract:** \$637,837.34

**Description of project:** Earthwork, Installation of Drainage, Sanitary Sewer, Water & Fire Line, Concrete Restoration, Asphalt Restoration, Signage, and Striping

**Date of completion:** December 2020

**Project: North Galt Shops**

**Project Address:** NE 32<sup>nd</sup> St and NE 33<sup>rd</sup> St, Ft. Lauderdale

**Owner (GC):** Sagaris Corporation, 1847 N University Dr, Coral Springs

**Engineer:** City of Fort Laud Transportation and Mobility Department, 290 NE 3<sup>rd</sup> Ave, Ft. Laud

**Project Manager:** Steven Fouladi [954-688-3407] email: steven@sagariscorp.com

**Total amount of contract:** \$88,755.45

**Description of project:** Installation of Drainage, Water, and Asphalt Restoration

**Date of completion:** December 2020

**Project: The Wave at Bayshore**

**Project Address:** 612 Bayshore Dr, Ft. Lauderdale

**Owner (GC):** Glenewinkel Construction, 3104 S Andrews Ave, Ft. Lauderdale

**Engineer:** Flynn Engineering, 241 Commercial Blvd, Lauderdale By The Sea [954-522-1004]

**Project Manager:** Bob Joy [954-990-8091] email: rjoy@glen-co.com

**Total amount of contract:** \$240,216.09

**Description of project:** Earthwork, Installation of Drainage, Sanitary Sewer, Water, Concrete Restoration, Asphalt Restoration, Signage, and Striping

**Date of completion:** September 2020

Project: Historic District Drainage Improvements  
Project Address: Misc. locations in City of Plantation  
Owner: City of Plantation, 400 NW 73<sup>rd</sup> Ave, Plantation  
Engineer: Craven Thompson and Associates, 3563 NW 53<sup>rd</sup> St, Ft. Lauderdale [954-739-6400]  
Project Manager: Don Shaver [954-739-6400] email: dshaver@craventhompson.com  
Total amount of contract: \$172,275.44  
Description of project: Installation of Drainage, Asphalt Restoration, and Sod Restoration  
Date of completion: July 2020

Project: Go Bond Roundabouts  
Project Address: NW 34<sup>th</sup> Ave / NW 9<sup>th</sup> St & NW 33<sup>rd</sup> Ave / NW 14<sup>th</sup> St, Lauderhill  
Owner: City of Lauderhill, 5581 W Oakland Park Blvd, Lauderhill  
Engineer: McMahon, 2090 Palm Beach Lakes Blvd, West Palm Beach [561-840-8650]  
Project Manager: Danyl Noel [954-730-3055] email: dnoel@lauderhill-fl.gov  
Total amount of contract: \$272,364.46  
Description of project: Installation of Roundabouts Including Asphalt Restoration, Speed Humps, Signage & Striping, RFB Installation, Concrete Restoration, and Sod Restoration  
Date of completion: June 2020

Project: SW 2<sup>nd</sup> Ave Streetscape  
Project Address: SW 2<sup>nd</sup> Ave, Ft. Lauderdale  
Owner (GC): Sagaris Corporation, 1847 N University Dr, Coral Springs  
Engineer: Calvin Giordano & Associates, 1800 Eller Dr Suite #600, Fort Laud [954-921-7781]  
Project Manager: Steven Fouladi [954-688-3407] email: steven@sagariscorp.com  
Total amount of contract: \$116,701.50  
Description of project: Installation of Drainage and Concrete Restoration  
Date of completion: April 2020

Project: Belmont Village  
Project Address: 1031 Seminole Dr, Ft. Lauderdale  
Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Flynn Engineering, 241 Commercial Blvd, Lauderdale by the Sea [954-522-1004]  
Project Manager: Ryan Fischer [954-627-9294] email: ryan.fischer@stiles.com  
Total amount of contract: \$1,201,881.70  
Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water & Fire Line, Concrete Restoration, Asphalt Restoration, Signage, and Striping  
Date of completion: April 2020

Project: Demolition of Pump Stations A-44, A-97, & C-3  
Project Address: Misc. locations in City of Ft. Lauderdale  
Owner: City of Fort Lauderdale, 100 North Andrews Ave, Ft. Lauderdale  
Engineer: City of Fort Lauderdale Public Works Dept, 100 North Andrews Ave, Ft. Lauderdale  
Project Manager: Luis Oliveira [954-828-5877] email: loliveira@fortlauderdale.gov  
Total amount of contract: \$182,300.31  
Description of project: Demo / Abandonment of Pump Stations and Installation of Sanitary Sewer, and Sod Restoration  
Date of completion: November 2019



Project: Rick Case Weston Access Road  
Project Address: 3520 Weston Rd, Weston  
Owner (GC): Bergeron Land Development, 19612 SW 69<sup>th</sup> Pl, Ft. Lauderdale  
Engineer: Winningham and Fradley Inc., 111 NE 44<sup>th</sup> Street, Oakland Park, [954-771-7440]  
Project Manager: Brian Thomason [954-680-6100] email: bthomason@bergeroninc.com  
Total amount of contract: \$81,627.66  
Description of project: Selective Demolition, Concrete Restoration, and Asphalt Restoration  
Date of completion: April 2020

Project: NE 30<sup>th</sup> Ave Drainage Improvements  
Project Address: 3448 NE 30<sup>th</sup> Ave, Lighthouse Point  
Owner: City of Lighthouse Point, 2200 NE 38<sup>th</sup> St, Lighthouse Point  
Engineer: Winningham and Fradley Inc., 111 NE 44<sup>th</sup> Street, Oakland Park, [954-771-7440]  
Project Manager: Charles Schramm [954-946-7386] email: cschramm@lighthousepoint.com  
Total amount of contract: \$6,450.00  
Description of project: Drainage Modifications and Asphalt Restoration  
Date of completion: November 2019

Project: US Cold Storage  
Project Address: 11801 NW 102<sup>nd</sup> Rd, Medley  
Owner (GC): Siteworks Inc., 21346 St. Andrews Blvd #305, Boca Raton  
Engineer: Primus Builders, 8294 Highway 92 #210, Woodstock [707-928-7120]  
Project Manager: Gary Bal [561-235-9575] email: gary.siteworksinc@gmail.com  
Total amount of contract: \$130,303.26  
Description of project: Earthwork, Installation of Drainage, and Concrete  
Date of completion: September 2019

Project: Port Everglades Terminal 4  
Project Address: 2050 Eisenhower Blvd, Ft. Lauderdale  
Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Cartaya & Associates, 2400 E Commercial Blvd, Ft. Lauderdale [954-771-2724]  
Project Manager: Steve Sjoblom [954-627-9150] email: steve.sjoblom@stiles.com  
Total amount of contract: \$651,357.45  
Description of project: Selective Demolition and Earthwork  
Date of completion: May 2019

Project: One20Fourth  
Project Address: 124 NE 4th St, Ft. Lauderdale  
Owner (GC): Siteworks Inc., 21346 St. Andrews Blvd #305, Boca Raton  
Engineer: Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud [954-568-0757]  
Project Manager: Gary Bal [954-931-5105] email: gary.siteworksinc@gmail.com  
Total amount of contract: \$525,408.54  
Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water & Fire, Concrete Restoration, Asphalt Restoration, Signage, and Striping  
Date of completion: April 2019

Project: Oceanside Townhomes

Project Address: 951 Sweetwater Lane, Boca Raton

Owner (GC): CJM Communities, 9825 Marina Blvd Suite #100, Boca Raton

Engineer: Shah Drotos, 3410 North Andrews Ave, Pompano Beach, [954-943-9433]

Project Manager: Charlie Lewis [561-488-9509] email: charlie@cjmcommunities.com

Total amount of contract: \$183,303.95

Description of project: Installation of Drainage, Sanitary Sewer, and Water Line

Date of completion: February 2019

Project: Sunrise Nova Dr Water Main and Force Main Improvements

Project Address: Nova Dr and SW 8<sup>th</sup> Ave, Davie

Owner: City of Sunrise, 10770 W Oakland Park Blvd, Sunrise

Engineer: Arcadis, 8201 Peters Rd Suite #3400, Plantation [954-761-3460]

Project Manager: Guarionex De Los Santos [954-888-6077] email: gdelossantos@sunrisefl.gov

Total amount of contract: \$2,103,434.05

Description of project: Installation of Sanitary Sewer / Force Main, Water Main, Abandonment of Existing Utilities, Concrete Restoration, Asphalt Restoration, and Sod Restoration

Date of completion: 2019

Project: 501 E Las Olas Blvd

Project Address: 501 E Las Olas Blvd, Ft. Lauderdale

Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale

Engineer: McLaughlin Engineering Company, 1700 NW 64<sup>th</sup> St Suite 400, Ft. Lauderdale

Project Manager: Jessica Quintana [954-627-9294] email: jessica.quintana@stiles.com

Total amount of contract: \$344,145.29

Description of project: Installation of Drainage, Sanitary Sewer, Water & Fire Line, Concrete, and Asphalt Restoration

Date of completion: December 2018

Project: JM Lexus Margate Phase 2

Project Address: 5250 W Sample Road, Margate

Owner: JM Family Enterprises, 111 Jim Moran Blvd, Deerfield Beach

Engineer: Shah Drotos, 3410 North Andrews Ave. Ext, Pompano Beach, [954-943-9433]

Project Manager: Dennis Arserio [954-590-5105] email: dennis.arserio@jmfamily.com

Total amount of contract: \$49,362.76

Description of project: Installation of Drainage, Concrete Restoration, and Site Restoration

Date of completion: November 2018

Project: Weston Health Park

Project Address: 1495 N Park Dr, Weston

Owner: Jaffer Realty, 3410 Stallion Lane, Weston

Engineer: Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud, [954-568-0757]

Project Manager: Shalina Jaffer [954-240-8780] email: shalina.jaffer@gmail.com

Total amount of contract: \$273,007.51

Description of project: Earthwork, Installation of Drainage, Water & Fire Line, Concrete, Asphalt Restoration, and Striping

Date of completion: October 2018

**Project: Hollywood Circle**

**Project Address:** 1740 Polk St, Hollywood

**Owner (GC):** Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale

**Engineer:** Craven Thompson and Associates, 3563 NW 53rd St, Ft. Lauderdale [954-739-6400]

**Project Manager:** Michael Bator [954-627-9300] email: michael.bator@stiles.com

**Total amount of contract:** \$999,829.80

**Description of project:** Demolition, Earthwork, Installation of Drainage, Sanitary Sewer, Water / Fire Line, Concrete Restoration, Asphalt Restoration, Signage, and Striping

**Date of completion:** October 2018

**Project: Landmark Bank**

**Project Address:** 707 SE 3rd Ave, Ft. Lauderdale

**Owner:** Third Avenue Limited Partnership, 707 SE 3<sup>rd</sup> Ave Suite #400, Ft. Lauderdale

**Engineer:** Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud [954-568-0757]

**Project Manager:** Philip Disque [954-764-4500] email: pdisque@pdcpa.net

**Total amount of contract:** \$137,669.45

**Description of project:** Installation of Water & Fire Line, Concrete Restoration, Asphalt Restoration, Signage, and Striping

**Date of completion:** May 2018

**Project: Hollywood Drainage Improvements for Alleys South of Hollywood Blvd**

**Project Address:** Alleys South of Hollywood Blvd, between 22nd and 26th Avenues

**Owner:** City of Hollywood, 2600 Hollywood Blvd, Hollywood

**Engineer:** Dept of Public Utilities Engineering, 1621 N 14th Ave, Hollywood [954-921-3930]

**Project Manager:** Raul Wainer [954-921-3930] email: rwainer@hollywoodfl.org

**Engineering Manager:** Clece Aurelus [954-921-3995] email: caurelus@hollywoodfl.org

**Total amount of contract:** \$279,483.86

**Description of project:** Installation of Drainage and Asphalt Restoration

**Date of completion:** April 2018

**Project: Paramount**

**Project Address:** 700 N Ft. Lauderdale Beach Blvd, Ft. Lauderdale

**Owner (GC):** Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale

**Engineer:** Flynn Engineering, 241 Commercial Blvd, Lauderdale By The Sea [954-522-1004]

**Project Manager:** Steve Sjoblom [954-627-9150] email: steve.sjoblom@stiles.com

**Total amount of contract:** \$887,616.77

**Description of project:** Earthwork, Installation of Drainage, Sanitary Sewer, Water & Fire Line, Concrete, Asphalt Restoration, Signage, and Striping

**Date of completion:** March 2018

**Project: Colee Hammock Traffic Calming Improvements**

**Project Address:** SE 12th Ave, 13th Ave, 16th Ave, and 17th Ave between Broward Blvd and Las Olas Blvd

**Owner:** City of Fort Lauderdale, 100 North Andrews Ave, Ft. Lauderdale

**Engineer:** City of Fort Laud Transportation and Mobility Department, 290 NE 3rd Ave, Ft. Laud

**Project Manager:** Catherine Prince [954-828-3794] email: cprince@fortlauderdale.gov

**Total amount of contract:** \$198,181.00

**Description of project:** Drainage, Sod Restoration, Concrete, Asphalt Restoration, Signage and Striping

**Date of completion:** 2018

Project: Sunrise NW 25th Court Roadway Improvements

Project Address: NW 25th Ct between NW 99th Terr and NW 89th Ave, Sunrise

Owner: City of Sunrise, 10770 W Oakland Park Blvd, Sunrise

Engineer: Arcadis, 8201 Peters Rd Suite #3400, Plantation [954-761-3460]

Project Manager: Bob Romeo [954-888-6060] email: rromeo@sunrisefl.gov

Total amount of contract: \$129,682.59

Description of project: Concrete Restoration, Asphalt Restoration, Signage and Striping, and Sod Restoration

Date of completion: 2018

Project: Wilton Manors NE 23rd Drive Parking Lot

Project Address: NE 23rd Drive and NE 11th Ave, Wilton Manors

Owner: City of Wilton Manors, 2020 Wilton Drive, Wilton Manors

Engineer: Chen Moore and Associates, 500 West Cypress Creek Road, Ft. Laud [954-730-0707]

Project Manager: David Archacki [954-390-2190] email: darchacki@wiltonmanors.com

Total amount of contract: \$255,000.00

Description of project: Installation of Drainage, Irrigation, Landscape, Electrical, Concrete, Asphalt Restoration, Signage, and Striping

Date of completion: 2018

Project: MODS

Project Address: 401 SW 2nd Street, Ft. Lauderdale

Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale

Engineer: Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud, [954-568-0757]

Project Manager: Jay Laing [954-627-9300] email: jay.laing@stiles.com

Total amount of contract: \$149,416.00

Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, and Concrete

Date of completion: December 2017

Project: JM Lexus Margate P1

Project Address: 5250 W Sample Road, Margate

Owner: JM Family Enterprises, 111 Jim Moran Blvd, Deerfield Beach

Engineer: Shah Drotos, 3410 North Andrews Ave, Pompano Beach, [954-943-9433]

Project Manager: Matt Giani [954-943-9433] email: mattgiani@shahdrotos.com

Total amount of contract: \$37,550.50

Description of project: Concrete, Sod Restoration, Signage and Striping

Date of completion: December 2017

Project: Hollywood Lift Station E-8 Force Main Replacement

Project Address: 800 Three Islands Blvd and NE 11th St, Hollywood

Owner: City of Hollywood, 2600 Hollywood Blvd, Hollywood

Engineer: Dept of Public Utilities Engineering, 1621 N 14th Ave, Hollywood [954-921-3930]

Project Manager: Jose Polanco [954-921-3930] email: jpolanco@hollywoodfl.org

Engineering Manager: Clece Aurelus [954-921-3995] email: caurelus@hollywoodfl.org

Total amount of contract: \$146,675.00

Description of project: Lift Station Renovation, Sanitary Sewer, Concrete Restoration, and Site Restoration

Date of completion: August 2017

Project: Hollywood Monroe Terrace Sewer Expansion  
Project Address: Monroe Terrace and South Dixie Hwy, Hollywood  
Owner: City of Hollywood, 2600 Hollywood Blvd, Hollywood  
Engineer: Dept of Public Utilities Engineering, 1621 N 14th Ave, Hollywood [954-921-3930]  
Project Manager: Vernal Sibble [954-921-3930] email: vsibble@hollywoodfl.org  
Engineering Manager: Clece Aurelus [954-921-3995] email: caurelus@hollywoodfl.org  
Total amount of contract: \$104,413.00  
Description of project: Installation of Sanitary Sewer, Asphalt Restoration, and Striping  
Date of completion: May 2017

Project: Dominion Storage  
Project Address: 5185 Coconut Creek Parkway, Margate  
Owner (GC): Siteworks Inc., 21346 St. Andrews Blvd #305, Boca Raton  
Engineer: Shah Drotos, 3410 North Andrews Ave, Pompano Beach, [954-943-9433]  
Project Manager: Gary Bal [954-931-5105] email: gary.siteworksinc@gmail.com  
Total amount of contract: \$231,188.00  
Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water Main, and Concrete  
Date of completion: May 2017

Project: 500 Building  
Project Address: 500 Jim Moran Blvd, Deerfield Beach  
Owner (GC): Shah Drotos, 3410 North Andrews Ave, Pompano Beach  
Engineer: Shah Drotos, 3410 North Andrews Ave, Pompano Beach, [954-943-9433]  
Project Manager: Matthew Giani [954-943-9433] email: mattgiani@shahdrotos  
Total amount of contract: \$73,390.44  
Description of project: Installation of Drainage and Asphalt Restoration  
Date of completion: March 2017

Project: Plantation Acres Drainage Improvements  
Project Address: Misc. NW 22<sup>nd</sup> St, NW 116h Ave, Plantation Acres  
Owner: Plantation Acres Improvement District, 1701 NW 112<sup>th</sup> Avenue, Plantation  
Engineer: Winningham and Fradley Inc., 111 NE 44<sup>th</sup> St, Oakland Park, [954-771-7440]  
Project Manager: Angel Alvarez [954-474-3092] email: angel\_alvarez@paidfl.org  
Total amount of contract: \$324,030.00  
Description of project: Installation of Drainage, Concrete, Site Restoration, and Asphalt Restoration  
Date of completion: January 2017

Project: Memorial Regional Hospital  
Project Address: 3501 Johnson St, Hollywood  
Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Miller Legg, 5747 N Andrews Way, Ft. Lauderdale [954-436-7000]  
Project Manager: Eric Pedrick [954-914-6402] email: eric.pedrick@stiles.com  
Total amount of contract: \$1,622,544.00  
Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Lift Station, Water / Fire Line, Concrete, Asphalt, and Striping  
Date of completion: 2017

Project: SW 8th St Sanitary Sewer Improvements  
Project Address: SW 8th St, Ft. Lauderdale  
Owner: City of Fort Lauderdale, 100 North Andrews Ave, Ft. Lauderdale  
Engineer: Keith and Schnars, 6500 North Andrews Ave, Ft. Lauderdale, [954-776-1616]  
Project Manager: Omar Castellon [954-828-5064] email: ocastellon@fortlauderdale.gov  
Total amount of contract: \$273,171.00  
Description of project: Installation of Sanitary Sewer, Water Main, and Asphalt Restoration  
Date of completion: 2017

Project: Colony West Golf Course Maintenance Facility Improvements  
Project Address: 8200 W McNab Road, Tamarac  
Owner: City of Tamarac, 7525 NW 88th Ave, Tamarac  
Engineer: City of Tamarac Engineering Division, 6011 Nob Hill Rd, Tamarac [954-597-3706]  
Project Manager: Bryan Farrow [954-597-3704] email: bryan.farrow@tamarac.org  
Total amount of contract: \$196,711.00  
Description of project: Installation of Force Main, Directional Bore, Sewer Laterals, Lift Station, Electrical, Concrete, Asphalt Restoration, and Striping  
Date of completion: December 2016

Project: Doral Kia Temporary Showroom  
Project Address: 10155 NW 12th Street, Doral  
Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Camero & Associates, Inc, 7400 SW 50th Terr Suite 204, Miami, [305-665-7602]  
Project Manager: Jay Laing [954-627-9300] email: jay.laing@stiles.com  
Total amount of contract: \$250,676.00  
Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water Main, Concrete, Asphalt, and Striping  
Date of completion: October 2016

Project: Animal Care Facility  
Project Address: 2400 SW 42nd Street, Ft. Lauderdale  
Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud, [954-568-0757]  
Project Manager: Eric Pedrick [954-914-6402] email: eric.pedrick@stiles.com  
Total amount of contract: \$961,665.00  
Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water / Fire Line, Concrete, and Striping  
Date of completion: June 2016

Project: 8th Ave Residences  
Project Address: 215 SE 8th Ave, Ft. Lauderdale  
Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud, [954-568-0757]  
Project Manager: Joe Darnaby (no longer with Stiles)  
Total amount of contract: \$785,963.00  
Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water / Fire, Concrete, Asphalt, and Signage  
Date of completion: April 2016

Project: Bel Lago  
Project Address: 5401 Wiles Road, Coconut Creek  
Owner (GC): Altman Construction, 1515 South Federal Hwy Suite #300, Boca Raton  
Engineer: HSQ Group, 1489 W Palmetto Park Rd Suite 340, Boca Raton [561-392-0221]  
Project Manager: Rob Gillette [954-444-6782] email: rgillette@altmancos.com  
Total amount of contract: \$2,327,363.57  
Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Earthwork, Concrete, and Asphalt Restoration  
Date of completion: 2016

Project: Hallandale Beach 40th Year Public Works CDBG  
Project Address: NW 8th Ave and 4th / 5th Street  
Owner: City of Hallandale Beach, 400 South Federal Hwy, Hallandale Beach  
Engineer: Craven Thompson and Associates, 3563 NW 53rd St, Ft. Lauderdale [954-739-6400]  
Project Manager: Cecilia Espejo [954-457-1607] email: mespejo@cohb.org  
Total amount of contract: \$106,999.00  
Description of project: Installation of Drainage, Concrete Restoration, Asphalt Restoration, Sod Restoration, and Striping  
Date of completion: 2016

Project: Traffic Circle at N 13th Avenue and Tyler Street  
Project Address: N 13th Ave and Tyler St, Hollywood  
Owner: City of Hollywood, 1621 N 14th Ave, Hollywood  
Engineer: Dept of Public Works Engineering & Architectural Services [954-921-3900]  
Project Manager: Clarissa Ip [954-921-3915] email: cip@hollywoodfl.org  
Total amount of contract: \$142,616.05  
Description of project: Installation of Concrete and Asphalt Restoration  
Date of completion: 2016

Project: FLL Westside Water Main Improvements  
Project Address: W Perimeter Rd and SW 43rd St, Ft. Lauderdale  
Owner: Broward County Aviation Department, 2200 SW 4th St Suite #101, Dania Beach  
Engineer: EAC Consulting, Inc., 815 NW 57th Ave Suite #402, Miami [305-265-5460]  
Project Manager: Carlos Hernandez [954-359-1025] email: cahernandez@broward.org  
Total amount of contract: \$1,730,732.00  
Description of project: Installation of Water Main, Concrete, Asphalt Restoration, Striping, and Sod Restoration  
Date of completion: December 2015

Project: iPic Theater  
Project Address: 3701 NE 163rd St, Miami  
Owner (GC): Stiles Construction, 301 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Hodges & Associates, 13642 Omega Rd, Dallas, Texas [972-387-1000]  
Project Manager: David Veit [954-524-6617] email: david.veil@stiles.com  
Total amount of contract: \$46,246.00  
Description of project: Installation of Concrete, Asphalt Restoration / Sealcoating, and Striping  
Date of completion: December 2015

Project: 1 West Las Olas

Project Address: 1 W Las Olas Blvd, Ft. Lauderdale

Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale

Engineer: Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud, [954-568-0757]

Project Manager: Jessica Quintana [954-627-9294] email: jessica.quintana@stiles.com

Total amount of contract: \$186,921.00

Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Concrete, and Asphalt Restoration

Date of completion: November 2015

Project: John U Lloyd State Park Water Main Replacement

Project Address: 6503 North Ocean Dr, Dania Beach

Owner: City of Hollywood, 1621 North 14th Ave, Hollywood

Engineer: Craven Thompson and Associates, 3563 NW 53rd St, Ft. Lauderdale [954-739-6400]

Project Manager: Wilhelmina Montero [954-921-3930] email: wmontero@hollywoodfl.org

Total amount of contract: \$1,650,767.00

Description of project: Installation of Water Main, Directional Drill, Asphalt Restoration, Striping and Sod Restoration.

Date of completion: October 2015

Project: Audi Ft. Lauderdale

Project Address: 1200 N Federal Hwy, Ft. Lauderdale

Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale

Engineer: Spring Engineering, 3014 U.S. Hwy 19, Holiday [727-938-1516]

Project Manager: Joseph Spence [954-627-9300] email: joseph.spence@stiles.com

Total amount of contract: \$572,940.00

Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water / Fire Line, Concrete, and Asphalt Restoration

Date of completion: October 2015

Project: Broward County Aviation Maintenance Facility

Project Address: 3399 SW 2<sup>nd</sup> Ave, Ft. Lauderdale

Owner (GC): Morganti Group, 1450 Centerpark Blvd Suite #260, West Palm Beach

Engineer: Keith & Associates, 301 E Atlantic Blvd, Pompano Beach [954-788-3400]

Project Manager: Mike Buckland [772-785-5700] email: mbuckland@morganti.com

Total amount of contract: \$1,806,904.72

Description of project: Earthwork, Installation of Drainage, Sanitary Sewer, Water Line, Concrete, and Asphalt Restoration

Date of completion: March 2015

Project: NE 5th Ave Drainage Improvements

Project Address: NE 5th Ave, Oakland Park

Owner: City of Oakland Park, 5399 North Dixie Hwy, Oakland Park

Engineer: AECOM, 7800 Congress Ave Suite 200, Boca Raton [561-994-6500]

Project Manager: Ronald Desbrunes [954-630-4482] email: ronald@oaklandparkfl.gov

Total amount of contract: \$321,037.00

Description of project: Earthwork, Installation of Drainage, Asphalt Restoration, and Sod Restoration

Date of completion: 2015



Project: Sea Ranch Lakes Beach Club  
Project Address: 5300 N Ocean Dr, Sea Ranch Lakes  
Owner: Amerity Group, 5300 N Ocean Dr, Sea Ranch Lakes  
Engineer: Ballbe & Associates, 2737 NE 30<sup>th</sup> Pl, Ft. Lauderdale [954-491-7788]  
Project Manager: John Stockamore [954-491-0100] email: ameritygroup@bellsouth.net  
Total amount of contract: \$100,885.00  
Description of project: Earthwork, Concrete, and Paver Restoration  
Date of completion: December 2014

Project: 3A Force Main  
Project Address: Ravenswood Rd and SW 42nd St, Dania Beach  
Owner: Broward County Water and Wastewater Services, 2555 W Copans Rd, Pompano Beach  
Engineer: Craven Thompson and Associates, 3563 NW 53rd St, Ft. Lauderdale [954-739-6400]  
Project Manager: John Morra [954-831-0902] email: jmorra@broward.org  
Total amount of contract: \$1,341,051.65  
Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Earthwork, Concrete, and Asphalt Restoration  
Date of completion: 2014

Project: Paseo del Mar  
Project Address: 1600 E Sunrise Blvd, Ft. Lauderdale  
Owner (GC): Stiles Construction, 301 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Flynn Engineering, 241 Commercial Blvd, Lauderdale by the Sea [954-522-1004]  
Project Manager: Ian Schwartz [954-627-9229] email: ian.schwartz@stiles.com  
Total amount of contract: \$963,169.00  
Description of project: Installation of Drainage, Sanitary Sewer, Water Main, Concrete, Asphalt, and Striping  
Date of completion: 2014

Project: Hallandale Beach Misc. Drainage Improvements  
Project Address: NW 2nd St and NW 6th Ave, Hallandale Beach  
Owner: City of Hallandale Beach, 400 South Federal Hwy, Hallandale Beach  
Engineer: Eisman and Russo, 6455 Powers Ave, Jacksonville [904-733-1478]  
Project Manager: Beatriz Alvarez [954-457-3040] email: balvarez@cohb.org  
Total amount of contract: \$235,315.00  
Description of project: Installation of Drainage, Concrete, Asphalt Restoration, Striping and Signage  
Date of completion: 2014

Project: Broward County Courthouse Parking Garage  
Project Address: 612 S Andrews Ave, Ft. Lauderdale  
Owner (GC): Stiles Construction, 201 East Las Olas Blvd, Ft. Lauderdale  
Engineer: Botek Thurlow Eng, Inc., 3409 NW 9th Ave, Suite #1102, Ft. Laud [954-568-0757]  
Project Manager: Steve Sjoblom [954-627-9150] email: steve.sjoblom@stiles.com  
Total amount of contract: \$1,052,499.00  
Description of project: Installation of Drainage, Sanitary Sewer, Water / Fire Line, Earthwork, Concrete, and Asphalt Restoration  
Date of completion: August 2013

ATTACHMENT A  
CONTRACT

THIS AGREEMENT, made and entered into, this \_\_\_\_ day of \_\_\_\_\_, A.D., \_\_\_\_\_, by and between the CITY OF HOLLYWOOD, Florida, a municipal corporation of the State of Florida, part of the first part, (hereinafter sometimes called the "CITY"), and

party of the second part (hereinafter sometimes called the "CONTRACTOR").

WITNESSETH: The parties hereto, for the considerations herein-after set forth, mutually agree as follows:

Article 1. Scope of Work: The CONTRACTOR shall furnish all labor, materials, and equipment and perform all work in the manner and form provided by the Contract Documents, for:

**STIRLING ROAD 8-INCH WATER MAIN EXTENSION  
Project No. 20-7106**

Article 2. The Contract Sum: The CITY shall pay to the CONTRACTOR, for the faithful performance of the Contract, in lawful money of the United States of America, and subject to additions and deductions as provided in the Contract Documents, as follows:

Based upon the prices shown in the Proposal heretofore submitted to the CITY by the CONTRACTOR, a copy of said Proposal being a part of these Contract Documents, the aggregate amount of this Contract being the sum of

Article 3. Partial and Final Payments: In accordance with the provisions fully set forth in the "General Conditions" of the "Specifications", and subject to additions and deductions as provided, the CITY shall pay the CONTRACTOR as follows:

- (a) On the 15th day, or the first business day thereafter, of each calendar month, the CITY shall make partial payments to the CONTRACTOR on the basis of a duly certified and approved estimate of work performed during the preceding calendar month by the CONTRACTOR, less five percent (5%) of the amount of such estimate which is to be retained by the CITY until all work has been performed strictly in accordance with this Agreement and until such work has been accepted by the CITY. The parties' rights and obligations regarding retainage are further specified in Sections 2s18.735 and 255.078, Florida Statutes, as applicable.
- (b) Upon submission by the CONTRACTOR of evidence satisfactory to the CITY that all payrolls, material bills and other costs incurred by the CONTRACTOR in connection with the construction of the WORK have been paid in full, and also, after all guarantees that may be required in the Specifications have been furnished and are found acceptable by the CITY, final payment on account of this Agreement shall be made within sixty (60) days after completion by the CONTRACTOR of all work covered by this Agreement and acceptance of such work by the ENGINEER and approved by the CITY.

Article 4. Time of Completion: The CONTRACTOR shall commence work to be performed under this Contract within ten (10) consecutive calendar days after date of written Notice To Proceed and shall fully complete the Contract in accordance within the Contract Documents and meet all intermediate milestone completion dates required after said date of written notice as set forth in the Proposal, as may be modified by Instructions to Bidders, and stated in the Notice to Proceed.

It is mutually agreed between the parties hereto, that time is the essence, and in the event that construction of the WORK is not completed within the Contract Time and per intermediate dates, as may have been modified solely in accordance with the General Conditions of this Contract, that from the compensation otherwise to be paid to the CONTRACTOR, the CITY is authorized and shall retain, for each day thereafter, Sundays and holidays included, the sum set forth in the Supplementary General Conditions of this Contract as liquidated damages sustained by the CITY in the event of such default by the CONTRACTOR, or shall withhold such compensation for actual and consequential damages as may be stated therein or contemplated therefrom.

Article 5. Additional Bond: It is further mutually agreed between the parties hereto, that if, at any time after the execution of this Agreement and the Payment and Performance Bonds required herein for the express purpose of assuring the faithful performance of the Contractor's work hereto attached, the CITY shall deem the surety or sureties' to be unsatisfactory, or, if for any reason, said bonds cease to be adequate to cover the performance of the work, the CONTRACTOR shall, at his expense, within five (5) days after receipt of notice from the CITY furnish an additional bond or bonds in such form and amount, and with such surety or sureties as shall be satisfactory to the CITY. In such event, no further payment to the CONTRACTOR shall be deemed to be due under this agreement until such new or additional security for the faithful performance of the work shall be furnished in manner and form satisfactory to the CITY.

Article 6. Contract Documents: All of the documents hereinafter listed form the Contract and they are as fully a part of the Contract as if hereto attached, or repeated in this Agreement:

1.	Introduction	15.	General Terms and Conditions
2.	Special Terms and Conditions	16.	Scope of Services
3.	Submittal Checklist Form	17.	Contract
4.	Acknowledgement and Signature Page	18.	Drug-Free Workplace Program
5.	Bid Form	19.	Solicitation, Giving, and Acceptance...
6.	Vendor Reference Form	20.	W-9 (Request for Taxpayer Identification)
7.	Hold Harmless and Indemnity Clause	21.	Performance Bond
8.	Proposal	22.	Payment Bond
9.	Non-Collusion Affidavit	23.	General Conditions, Public Utilities
10.	Sworn Statement...Public Entity Crimes	24.	Supplementary General Conditions
11.	Information Required from Bidders	25.	Addenda
12.	Certifications Regarding Debarment...	26.	Specifications
13.	Trench Safety Form	27.	Drawings
14.	Bid Guaranty Form	28.	List of Subcontractors

Article 7. The rate of wages and fringe benefits, or cash equivalent, for all laborers, mechanics and apprentices employed by any contractor or subcontractor on the work covered by the contract shall be not less than the prevailing rate of wages and fringe benefit payments or cash equivalent for similar skills or classifications of work as established by the General Wage Decision by the United States Department of Labor for Broward County, Florida that is in effect prior to the date the city issues its invitation for bids. If the General Wage Decision fails to provide for a fringe benefit rate for any worker classification, then the fringe benefit rate applicable to the worker classification shall be the fringe benefit rate applicable to the worker classification with a fringe benefit rate that has a basic hourly wage closest in dollar amount to the worker classification for which no fringe benefit rate has been provided.

Article 8. No additional work or extras shall be performed unless the same be duly authorized by appropriate action of the City.

Article 9. That in the event either party brings suit for enforcement of disagreement, the prevailing party shall be entitled to attorney's fees and court costs in addition to any other remedy afforded by law.

Article 10. The Contractor shall guarantee the complete project against poor workmanship and faulty materials for a period of twelve (12) months after final payment and shall immediately correct any defects which may appear during this period upon notification by the City or the Engineer.

Article 11. The making and acceptance of the final payment shall constitute a waiver of all claims by the Contractor, except those previously made and still unsettled.

\*\*\*\*\*

IN WITNESS WHEREOF the parties hereto have executed this Agreement on the day and date first above written in three (3) counterparts, each of which shall, without proof or accounting for the other counterparts, be deemed an original contract:

THE CITY OF HOLLYWOOD, FLORIDA  
Party of the First Part

By: \_\_\_\_\_ (SEAL)  
JOSH LEVY, MAYOR

ATTEST:

\_\_\_\_\_  
PATRICIA A. CERNY, MMC  
City Clerk

\*\*\*\*\*

CONTRACTOR  
Party of the Second Part

WHEN THE CONTRACTOR IS AN INDIVIDUAL:

Signed, sealed and delivered in the presence of:

_____	_____ (SEAL)
(Witness)	(Signature of Individual)

_____	_____
(Witness)	(Signature of Individual)

\*\*\*\*\*

WHEN THE CONTRACTOR IS A SOLE PROPRIETORSHIP OR OPERATES UNDER A TRADE NAME:

Signed, sealed and delivered in the presence of:

_____	_____
(Witness)	(Name of Firm)
_____	_____ (SEAL)
(Witness)	(Signature of Individual)

\*\*\*\*\*

WHEN THE CONTRACTOR IS A PARTNERSHIP:

_____	_____
(Witness)	(Name of Firm) a Partnership
_____	BY: _____ (SEAL)
(Witness)	(Partner)

\*\*\*\*\*

WHEN THE CONTRACTOR IS A CORPORATION:

Attest:

\_\_\_\_\_  
Secretary

\_\_\_\_\_  
(Correct Name of Corporation)

BY: \_\_\_\_\_ (SEAL)  
President

\*\*\*\*\*

APPROVED AS TO FORM  
AND LEGAL SUFFICIENCY  
for the use and reliance of the  
City of Hollywood, Florida only:

By \_\_\_\_\_  
DOUGLAS R. GONZALES  
City Attorney

APPROVED AS TO FINANCE:

By \_\_\_\_\_  
David E. Keller  
Financial Services Director

CERTIFICATE

**STATE OF FLORIDA)  
COUNTY OF BROWARD)**

***I HEREBY CERTIFY*** that a meeting of the Board of Directors of \_\_\_\_\_,  
a corporation under the laws of the State of \_\_\_\_\_, was held on \_\_\_\_\_,  
20\_\_\_\_, and the following resolution was duly passed and adopted:

"RESOLVED, that \_\_\_\_\_ as \_\_\_\_\_ President of the corporation,  
be and he is hereby authorized to execute the contracts on behalf of this  
corporation, and that his execution thereof, attested by the Secretary of  
the corporation and with corporate seal affixed, shall be the official act and  
deed of this corporation."

I further certify that said resolution is now in full force and effect.

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

\_\_\_\_\_  
Secretary

- END OF SECTION -

ATTACHMENT A  
PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That we \_\_\_\_\_,

Name	Address	Tel. No.
as Principal, and _____		

Name	Address	Tel. No.
------	---------	----------

as Surety, are held and firmly bound unto the City of Hollywood in the sum of \_\_\_\_\_ Dollars (\$\_\_\_\_\_),

for the payment of said sum we bind ourselves, our heirs, executors, administrators and assigns, jointly and severally, for the faithful performance of a certain written contract, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ entered into between the Principal and the City of Hollywood, Florida, for the installation of **STIRLING ROAD 8-INCH WATER MAIN EXTENSION, Project No. 20-7106.**

A copy of said Contract, **No. 20-7106** is incorporated herein by reference and is made a part hereof as if fully copied herein.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH, that if the Principal shall in all respects comply with the terms and conditions of said Contract and his obligations thereunder, including all of the Contract Documents (that include the Introduction, Special Terms and Conditions, Scope of Services, General Terms & Conditions, Submittal Checklist Form, Instructions to Bidders, Proposal, Proposal Bid Form, Basis of Payment, Bid Guaranty Form, Trench Safety Form, Information Required from Bidders, Vendor Reference Forms, Hold Harmless and Indemnity Clause, Non-Collusion Affidavit, Sworn Statement...Public Entity Crimes, Certifications Regarding Debarment... , Drug-Free Workplace Program, Solicitation, Giving, and Acceptance..., Contract, Performance Bond, Payment Bond, General and Supplementary General Conditions, Technical Specifications, Addenda and Drawings), therein referred to and made a part thereof, and such alterations as may be made in said Drawings and Specifications as therein provided for, and shall indemnify and save harmless the City of Hollywood against and from all expenses, damages, injury or conduct, want of care of skill, negligence or default, including patent infringement on the part of said Principal, his agents or employees, in the execution or performance of said Contract, including errors in the Drawings furnished by said Principal, and further, if the Principal shall promptly make payments to all who supply him, with labor and/or materials, used directly or indirectly by the Principal in the prosecution of the work provided for in said Contract, then this obligation shall be null and void; otherwise, the Principal and Surety, jointly and severally, agree to pay the City of Hollywood any difference between the sum that the City of Hollywood may be obliged to pay for the completion of said work, by Contract or otherwise, and the sum that the City of Hollywood would have been obliged to pay for the completion said work had the Principal properly executed all of the provisions of said Contract, and any damages, whether direct, indirect, or consequential, which the City of Hollywood may incur as a result of the failure of the said Principal to properly execute all of the provisions of said Contract.



AND, the said Principal and Surety hereby further bind themselves, their successors, executors, administrators and assigns, jointly and severally, that they will amply and fully protect the City of Hollywood against, and will pay any and all amounts, damages, costs and judgments which may be recovered against or which the Owner may be called upon to pay to any person or corporation by reason of any damage arising from the performance of the said work, repair or maintenance thereof, or the manner of doing the same, or his agents or his servants, or the infringements of any patent rights by reason of the use of any material furnished or work done, as aforesaid or otherwise.

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

WHEN THE PRINCIPAL IS AN INDIVIDUAL:

Signed, sealed and delivered in the presence of:

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Signature of Individual)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Printed Name of Individual)

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Address)

WHEN THE PRINCIPAL IS A SOLE PROPRIETORSHIP OR OPERATES UNDER A TRADE NAME:

Signed, sealed and delivered in the presence of:

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Name of Firm)

\_\_\_\_\_  
(Address)

By: \_\_\_\_\_  
(Seal)  
(Signature of Individual)

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
Address

\*\*\*\*\*

WHEN THE PRINCIPAL IS A PARTNERSHIP:

Signed, sealed and delivered in the presence of:

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Name of Partnership)

\_\_\_\_\_  
(Address)

By: \_\_\_\_\_  
(Seal)  
(Partner)

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Printed Name of Partner)

\_\_\_\_\_  
Address

\*\*\*\*\*

WHEN THE PRINCIPAL IS A CORPORATION:

Attest:

\_\_\_\_\_  
(Secretary)

\_\_\_\_\_  
(Name of Corporation)

By: \_\_\_\_\_  
(Seal)  
(Affix Corporate Seal)

\_\_\_\_\_  
(Printed Name)

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

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, \_\_\_\_\_, certify that I am the Secretary of the corporation named as Principal in the within bond; that \_\_\_\_\_, who signed the said 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 Bond was duly signed, sealed and attested for and on behalf of said corporation by authority of its governing body.

\_\_\_\_\_  
Secretary (SEAL)

TO BE EXECUTED BY CORPORATE SURETY

Attest:

\_\_\_\_\_  
(Secretary)

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

\_\_\_\_\_  
(Business Address)

By: \_\_\_\_\_  
(Affix Corporate Seal)

\_\_\_\_\_  
(Attorney-In-Fact)

\_\_\_\_\_  
(Name of Local Agency)

\_\_\_\_\_  
(Business Address)

STATE OF FLORIDA

Before me, a Notary Public, duly commissioned, qualified and acting, personally appeared, \_\_\_\_\_ to me well known, who being by me first duly sworn upon oath, says that he is the attorney-in-fact for the \_\_\_\_\_ and that he has been authorized by \_\_\_\_\_ to execute the foregoing bond on behalf of the CONTRACTOR named therein in favor of the City of Hollywood, Florida.

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

\_\_\_\_\_  
Notary Public, State of Florida  
My Commission Expires:

\*\*\*\*\*

APPROVED AS TO FORM AND  
LEGAL SUFFICIENCY  
for the use and reliance of the  
City of Hollywood, Florida only:

APPROVED AS TO FINANCE:

By \_\_\_\_\_  
Douglas R. Gonzales  
City Attorney

By \_\_\_\_\_  
David E. Keller  
Financial Services Director

- END OF SECTION -

ATTACHMENT A  
PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, \_\_\_\_\_  
Name Address Tel. No.

As Principal and \_\_\_\_\_  
Name Address Tel. No.

as Surety, are held and firmly bound to the CITY OF HOLLYWOOD, FLORIDA herein called the City, in the sum of \_\_\_\_\_

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the payment of said sum we bind ourselves, our heirs, executors, administrators and assigns, jointly and severally, for the faithful performance of a certain written contract dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, entered into between the Principal and the City of Hollywood, Florida for the **STIRLING ROAD 8-INCH WATER MAIN EXTENSION, Project No. 20-7106**

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

THE CONDITION of this bond is that if Principal promptly makes payments to all claimants defined in Section 255.05 (1), F.S., supplying Principal with labor, materials or supplies used directly or indirectly by principal in the prosecution of the work provided for in the Contract, then this bond shall be null and void and of no further force and effect; otherwise to remain in full force and effect.

Said surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or any other changes in or under contract documents and compliance or noncompliance with any formalities connected with the contract does not affect Surety's obligation under this bond and Surety waives notice of any such change, extension of time, alteration or addition to the terms of the Contract or any other changes, compliance, or noncompliance to the terms of the Contract or to the Work or to the Specifications.

This bond is furnished pursuant to the statutory requirements for bond on public works projects being Florida Statute 255.05. Claimants are hereby notified that the Statute 255.05(2) specifically requires that notice be given to Contractor within 45 days after beginning to furnish labor, materials or supplies for the prosecution of the work that claimants intends to look to the bond for protection. Further notice is hereby given claimants that written notice of nonpayment within ninety (90) days after performance of the labor or after complete delivery of the materials or supplies must be delivered to the Contractor and to the Surety. Further notice is hereby given that no action for labor, materials or supplies may be instituted against the Contractor or the Surety on the bond after one year for the performance of the labor or completion of delivery of the materials or supplies.

Without modifying the foregoing, this bond shall be construed as requiring of the principal and surety no more and no less than is specified in F.S. 255.050.

SIGNED AND SEALED, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

**PRINCIPAL:**

ATTEST:

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

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

(SEAL)

**SURETY:**

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

ATTEST:

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

\_\_\_\_\_  
(Signature)  
\_\_\_\_\_  
(Attorney-in-Fact)

\*\*\*\*\*

APPROVED AS TO FORM AND  
LEGAL SUFFICIENCY  
for the use and reliance of the  
City of Hollywood, Florida only:

By \_\_\_\_\_  
Douglas R. Gonzales  
City Attorney

APPROVED AS TO FINANCE:

By \_\_\_\_\_  
David E. Keller  
Financial Services Director

- END OF SECTION -

ATTACHMENT B  
GENERAL CONDITIONS, PUBLIC UTILITIES

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**ATTACHMENT B  
GENERAL CONDITIONS, PUBLIC UTILITIES**

**CITY OF HOLLYWOOD, FLORIDA  
GENERAL CONDITIONS  
FOR CONSTRUCTION CONTRACTS**

**ARTICLE 1 - DEFINITIONS**

In the interpretation of these Contract Documents the following terms shall have the meaning indicated:

**ADDENDA** - Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the Contract Documents.

**CHANGE ORDER** - A written order to CONTRACTOR executed in accordance with City procurement procedures, as amended authorizing an addition, deletion or revision in the work, or an adjustment in the Contract Price or the Contract Time, issued after the date of Award.

**CITY (OWNER)** - The City of Hollywood, Florida.

**COMMISSION** - The City Commission of the City of Hollywood, Florida, being the legislative body of the CITY as set forth in the City of Hollywood Charter.

**CONTRACT** - The written agreement between the CITY and the CONTRACTOR covering the work to be performed in accordance with the other Contract Documents which are attached to the Contract and made a part thereof.

**CONTRACTOR** - The person, firm, or corporation with whom the CITY has entered into the Contract.

**CONTRACT DOCUMENTS** - The Notice to Bidders, Instruction to Bidders, Proposal, Information Required of Bidders, all Bonds, Agreement, and all supporting documents, these General Requirements and Covenants, the Specifications, Drawings and Permits, together with all Addenda and Change Orders issued with respect thereto.

**CONTRACT PRICE** - Total monies payable by the CITY to the CONTRACTOR under the terms and conditions of the Contract Documents.

**CONTRACT TIME** - The number of days agreed to in the Proposal, commencing with the date of the Notice to Proceed for completion of the work.

**CONTROL** - shall mean having the primary power, direct or indirect, to influence the management of a business enterprise. The controlling party must have the demonstrable ability to make independent and unilateral business decisions on a day-to-day basis, as well as the independent and unilateral ability to make decisions which may influence and chart the future course of the business.

**DATE OF SUBSTANTIAL COMPLETION** - The date when the work on the project, or specified part thereof, is substantially completed in accordance with the Contract Documents, such that

the CITY can occupy or utilize the project or specified part thereof for the use and purpose for which it was intended as determined and accepted by the Engineer.

DAYS - Calendar days of 24 hours measured from midnight.

DRAWINGS - The drawings which show the character and scope of the work to be performed and which have been prepared by the DESIGN ENGINEER approved by ENGINEER and are referred to in and are a part of the Contract Documents.

ENGINEER - The Director of Public Utilities of the CITY of Hollywood, Florida, or his authorized designee.

EXCUSABLE DELAY - Delay caused by the CITY, hurricane, tornadoes, fires, floods, epidemics or labor strikes.

GENERAL CONDITIONS - That segment of the Contract Specifications incorporating the Provisions common to all CITY Construction Contracts.

INEXCUSABLE DELAY - Any delay caused either (i) by events or circumstances within the control of the CONTRACTOR not specified in the definition of excusable delay.

INSPECTOR - The authorized field representative of the ENGINEER.

LIQUIDATED DAMAGES - The amount prescribed in the General Requirements to be paid the CITY, or to be deducted from any payments due the CONTRACTOR for each day's delay in completing the whole or any specified portion of the work beyond the Contract Time.

NOTICE OF AWARD - The written notice by the CITY to the successful Bidder stating that upon his execution of the Agreement and other requirements as listed therein within the time specified the CITY will sign and deliver the Agreement.

NOTICE TO PROCEED - A written notice by the ENGINEER to the CONTRACTOR fixing the date on which the Contract Time will commence to run and on which the CONTRACTOR shall start to perform his obligation under the Contract Documents.

"OR EQUAL" - Equivalent or superior in construction, efficiency and effectiveness to a type, brand, model or process called out in the Contract Documents to establish a basis of quality as determined by the ENGINEER.

SHOP DRAWINGS - All certified affidavits, drawings, diagrams, illustrations, schedules and other data which are specifically prepared by CONTRACTOR, a Subcontractor, manufacturer, fabricator, supplier or distributor to illustrate some portion of the work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a manufacturer, fabricator, supplier or distributor and submitted by CONTRACTOR to illustrate material or equipment for some portion of the WORK.

SPECIFICATIONS - Division 1 through 17 of these Contract Documents, consisting of administrative details and written technical descriptions of materials, equipment, standards and workmanship.

SUPPLEMENTARY CONDITIONS - Division 1 of the Contract Specifications incorporating the provisions peculiar to a specific project.

SUBCONTRACTOR - An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the work

SURETY - The person, firm or corporation responsible for the Bidder's acts in the execution of the Contract, or which is bound to the CITY with and for the CONTRACTOR to insure performance of the Contract and payment of all obligations pertaining to the work.

WORK - All the work materials or products specified, indicated, shown or contemplated in the Contract Documents to construct and complete the improvement, including all alterations, modifications, amendments or extension thereto made by Change Orders.

## ARTICLE 2 - ORGANIZATIONAL ABBREVIATIONS

Abbreviations of organizations which may be used in these Specifications are:

AASHTO: American Association of State Highway and Transportation Officials

ACI: American Concrete Institute

AIA: American Institute of Architects

AISC: American Institute of Steel Construction

AITC: American Institute of Timber Construction

ANSI: American National Standards Institute

APWA: American Public Works Association

ASTM: American Society for Testing and Materials

ASCE: American Society of Civil Engineers

ASME: American Society of Mechanical Engineers

ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers

AWPA: American Wood Preservers Association

AWWA: American Water Works Association

AWS: American Welding Society

BCEQCB: Broward County Environmental Quality Control Board

CRSI: Concrete Reinforcing Steel Institute

FDEP: Florida Department of Environmental Protection

FDNR: Florida Department of Natural Resources

FDOT: Florida Department of Transportation

FPL: Florida Power and Light

IEEE: Institute of Electrical and Electronic Engineers

NACE: National Association of Corrosion Engineers

NCPI: National Clay Pipe Institute

NEC:	National Electrical Code
NEMA:	National Electrical Manufacturers Association
NFPA:	National Fire Protection Association
OSHA:	Occupational Safety and Health Act
PCI:	Prestressed Concrete Institute
SFBC:	South Florida Building Code, Broward Edition, Latest Revision
SFWMD:	South Florida Water Management District
SSPC:	Structural Steel Painting Council
UL:	Underwriters' Laboratories, Inc.
UNCLE:	Utility Notification Center for Location before Excavation (1-800-432-4770)
USEPA:	United States Environmental Protection Agency
USGS:	United States Geological Survey
WWEMA:	Water and Wastewater Equipment Manufacturers Association

## ARTICLE 3 - MISCELLANEOUS PRELIMINARY MATTERS

### 3.1 Contract Document Discrepancies:

Any discrepancies, conflicts, errors or omissions found in the Contract Documents shall be promptly reported to the ENGINEER who will issue a correction, if necessary, in writing. The CONTRACTOR shall comply with any corrective measures regarding the same as prescribed by the ENGINEER.

### 3.2 Submissions:

Unless indicated otherwise in the Contract Documents, within seven days subsequent to the CONTRACTOR executing and submitting the required documents of Article 2.13 in Section II - Special Terms and Conditions, the CONTRACTOR shall submit to the ENGINEER an estimated progress schedule indicating the starting and completion days of the various stages of the work. A preliminary Schedule of Values and a preliminary schedule of Shop Drawing submissions may also be required by Section 01300 of Division 1 - General Requirements.

### 3.3 Pre-construction Conference:

The Contractor will be required to attend a mandatory Pre- Construction Conference for review of the above schedules, establishing procedures and establishing a working understanding among the parties as to the work.

### 3.4 Contract Time:

The Contract Time will commence on the date of the Notice to Proceed and shall exist for the total number of days as specified in Attachment C – Supplementary General Conditions, Section 1, Project Schedule as modified by any subsequent Change Orders, Unless the CONTRACTOR fails to complete the requirements of Section II - Special Terms and Conditions, the additional time in days (including weekends) required to correctly complete the documents will be deducted by CITY from the Contract Time specified by the CONTRACTOR in this Proposal.

### 3.5 Computation of Time:

When any period of time is referred to the Contract Documents by days, it shall 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 legal holiday, such day shall be omitted from the computation.

### 3.6 Commencement of Work:

The CONTRACTOR shall not perform work at the site prior to the date of the Notice to Proceed.

### 3.7 Extension of Contract Time:



Extensions of time shall be based solely upon the effect of delays to the work as a whole. Extensions of time shall not be granted for delays to the work, unless the CONTRACTOR can clearly demonstrate, through schedule analysis, that the delay to the work as a whole arose in accordance with Article 11, Changes in Contract Time and that such delays did or will, in fact, delay the progress of work as a whole. Time extensions shall not be allowed for delays to parts of the work that are not on the critical path of the Project schedule. Time extensions shall not be granted until all float or contingency time, at the time of the delay, available to absorb specific delays and associated impacts, is used.

**3.8 Notice and Service Thereof:**

All notices, demands, requests, instructions, approvals and claims shall be in writing. Notices, demands, etc. shall be deemed to have been validly given if 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 if delivered at or sent by registered or certified mail, postage prepaid, to the business address as defined at the Pre-Construction Conference.

**3.9 Separate Contract:**

The CITY reserves the right to let other Contracts in connection with this Project. The CONTRACTOR shall afford other Contractors reasonable opportunity for the introduction and storage for their materials and the execution of their work and shall properly connect and coordinate his work with theirs.

**3.10 Assignments of Contract:**

No assignment by the CONTRACTOR of the Contract or of any part thereof, or any monies due or to become due thereunder shall be made.

**3.11 Patents:**

It is mutually understood and agreed that without exception, Contract prices are to include all royalties and costs arising from patents, trademarks, and copyrights in any way involved in the work. It is the intent that whenever the Contractor is required or desired to use any design, device, material or process covered by letters, patent, or copyright, the right for such use shall be provided for by suitable legal agreements with the Patentee or Owner and a copy of this agreement shall be filed with the ENGINEER. However, whether or not such an agreement is made or filed as noted, the CONTRACTOR and the Surety in all cases shall indemnify and save harmless the CITY from any and all claims for infringement by reason of the use of any such patented design, device, material or process, to be performed under the Contract, and shall indemnify the said CITY from any costs, expenses, and damages which it may be obliged to pay, by reason of such infringement, at any time during the prosecution or after the completion of the work.

### 3.12 Federal Excise Tax:

The forms needed for applying for exemption certificates for materials and equipment, normally subject to the Federal Excise Tax, may be obtained from the Director of Internal Revenue, Jacksonville, Florida.

The CONTRACTOR is solely responsible for obtaining the desired exemption certificate from the Federal Government.

### 3.13 Savings Due to Excise Tax Exemptions:

The Bidder shall include in the Bid price the estimated cost of all goods, supplies and equipment which will be incorporated in the Work and the taxes that the Bidder would be required to pay if the Bidder were to purchase such goods, supplies or equipment. By subsequent Change Order(s), the parties shall reduce the Bid price to reflect any goods, supplies and equipment purchased directly by City and the resulting tax savings due to City's exemption from Excise Taxes.

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 State of Florida and its political subdivisions. Consistent with the tax exemption for municipalities provided by state law, CITY and CONTRACTOR shall jointly operate so that CITY may purchase directly, goods, supplies and equipment which will be incorporated into the Work. The goods, supplies and equipment that will be purchased by CITY shall be approved in advance by the parties.

With respect to all goods, supplies and equipment to be purchased by CITY, CONTRACTOR shall, on behalf of CITY, take all actions necessary and appropriate to cause all purchases to be made and shall be responsible for delivery of all such goods, supplies and equipment, including verification of correct quantities and documents or orders, coordination of purchases and delivery schedules, sequence of delivery, unloading, handling and storage through installation, obtaining warranties and guarantees required by the Contract Documents, inspection and acceptance of the goods, supplies and equipment at the time of delivery, and other arrangements normally required for the particular goods, supplies or equipment purchased. Unless otherwise directed by CITY, such actions shall also include taking the lead in efforts to resolve any and all disputes with the vendor. CONTRACTOR shall ensure that each vendor of goods, supplies and equipment purchased by CITY agrees in writing to the terms and conditions contained in CITY'S standard purchase order, which terms and conditions are set forth in Attachment C - Supplementary General Conditions of the Contract Documents. Even though CITY may purchase such goods, supplies and equipment, the goods, supplies and equipment shall be stored at the site in the same manner as goods, supplies and equipment purchased by CONTRACTOR.

CONTRACTOR shall hold CITY harmless from delays in manufacturing, delivery, and other unforeseen conditions that may arise as part of the procurement of CITY-purchased goods, supplies and equipment.

### 3.14 Overtime Work:

The CONTRACTOR shall receive no additional compensation for overtime work, i.e., work in excess of eight hours in any one calendar day or 40 hours in any one calendar week, even though such overtime work may be required under emergency conditions and may be ordered by the ENGINEER in writing. Additional compensation will be paid the CONTRACTOR for overtime work only in the event extra work is ordered by the ENGINEER and the Change Order specifically authorizes the use of overtime work and then only to such extent as overtime wages are regularly being paid by the CONTRACTOR for overtime work of a similar nature in the same locality.

### 3.15 Inspections and Testing during Overtime:

The CONTRACTOR shall establish a normal work schedule which does not exceed eight hours per day in a normal work day nor 40 hours per week in a normal work week. Normal work days shall be Monday through Friday. Whenever CONTRACTOR's work requires scheduled overtime, unless such overtime work is specifically required by the Contract Documents, CONTRACTOR shall reimburse the CITY for the extra costs incurred for providing Inspectors. Overtime shall be scheduled only after CONTRACTOR obtains written permission from the CITY. A change order shall be prepared to cover the CITY costs. Inspector costs shall be charged to the CONTRACTOR at a rate of \$80.00 per hour with a minimum of four hours charged for weekends and holidays. If the CONTRACTOR has an overtime work force size of fifty or more persons a second Inspector will be required and the costs for two Inspectors will be \$160.00 per hour.

### 3.16 Nights, Sunday or Holiday Work:

Except upon specific permission of the ENGINEER, the CONTRACTOR shall not perform any work on Sundays or on legal State or Municipal holidays. In accordance with City of Hollywood Code of Ordinances, Section 21.49, no work between 6:00 p.m. and 8:00 a.m. will be permitted, except in case of an emergency, that violates Section 21.49 concerning noise levels. All costs of testing and inspection performed during night, Sunday or holiday work shall be borne by the CONTRACTOR. The CONTRACTOR shall notify all regulatory agencies, including but not limited to the City Police Department, Fire Department, and Code Enforcement Department.

### 3.17 Injury or Damage Claims:

Should CITY or CONTRACTOR suffer injury or damage to their person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim shall be made in writing to the other party within a reasonable time of the first observance of such injury or damage. However, nothing herein shall be deemed to affect the rights, privileges and immunities of City as are set forth in Section 768.28, Florida Statutes.

## ARTICLE 4 - CONTRACT DOCUMENTS

### 4.1 Intent:

The Contract Documents comprise the entire Agreement between the CITY and CONTRACTOR concerning the work. The Contract Documents can be altered only by Change Order. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. It is the intent of the Contract Documents that the CONTRACTOR, for due consideration, shall furnish all equipment, material, supervision and labor, (except as may be specifically noted otherwise) required or necessary to complete the work in total accordance with said Documents. It is the intent of the Drawings and Specifications to describe the Project to be constructed in accordance with the Contract Documents. Any work that may reasonably be inferred from the Drawings or Specifications as being required in order to produce the intended result shall be supplied whether or not it is specifically called for.

### 4.2 Order of Precedence of Contract Documents:

In resolving differences resulting from conflicts, errors or discrepancies in any of the following Contract Documents, the order of precedence shall be as follows:

1. Permits
2. Change Orders
3. Contract Agreement
4. Specification
5. Drawings

Within the Specifications the order of precedence is as follows:

1. Addenda
2. Section I - Introduction
3. Section II – Special Terms and Conditions
4. General Terms & Conditions
5. Attachment C- Supplementary General Conditions
6. Attachment B - General Conditions
7. Division 1, General Requirements
8. Technical Specifications
9. Referenced Standard Specifications

With reference to the Drawings the order of precedence is as follows:

1. Figures Govern over Scaled Dimensions
2. Detail Drawings Govern over General Drawings
3. Change Order Drawings Govern over Contract Drawings
4. Contract Drawings Govern over Standard or Shop Drawings

### 4.3 Reference To Standards:

Any reference to standard Specifications, manuals or codes of any organization or governmental authority shall mean the latest edition, in effect as of the Bid Opening Date.

## ARTICLE 5 - BONDS AND INSURANCE

### 5.1 Bid Guarantee:

Bidders maybe required to submit a Bid Guarantee in an amount indicated in the SECTION II - SPECIAL TERMS AND CONDITIONS. This Guarantee may be a Certified or Cashier's Check on a solvent National or State Bank, or a Bid Bond written by a Surety licensed to do business in Florida and rated at least "A", Class X in the latest edition of "Best's Key Rating Guide" published by A.M. Best Company.

### 5.2 Performance and Payment Bond:

CONTRACTOR shall furnish Performance and Payment Bonds, in amounts equal to the Contract Price as Security for the faithful performance and payment of CONTRACTOR's obligations. The Bond or Bonds shall remain in effect one year after the date of final payment. The Surety must be qualified as specified above in Paragraph 5.1. However, the City reserves the right to require additional bonds as set forth in Article 5 of the Contract.

### 5.3 Signatures:

All Bonds signed by an Agent must be accompanied by a Certified copy of the authority to act, with said copy having been signed (not typed nor printed) by an Officer of the Surety and carrying the seal of the Surety.

### 5.4 Insurance Coverage:

Within ten days from Notice of Award the CONTRACTOR shall purchase and maintain such insurance as specified in Article 2.25 of Section II – Special Terms and Requirements as will protect him from claims set forth below which may arise out of or result from the CONTRACTOR's operations under the Contract or Contract Documents, whether such operations be by himself or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.

### 5.5 Certificates of Insurance:

Within ten days of award, the Contractor shall obtain a Certificate of Insurance reflecting the necessary coverages as required by the Contract Documents. Certificates of Insurance shall contain a provision that coverages afforded under the policies will not be canceled until at least 30 days prior written notice has been given to the CITY. The City of Hollywood must be named as additional insured on all coverage with the exception of Workmen's Compensation. Policies shall be issued by companies authorized to do business under the Laws of the State of Florida. Policyholders and Financial Ratings must be no less than "A" and Class X respectively in the latest edition of "Best Key Rating Guide", published by A.M. Best Company.

5.6     Insurance Limits of Liability:

The insurance required by this Article shall be written for no less than the level of liability specified in "Insurance Requirements", Section 2 of the Supplementary General Conditions, or required by law, whichever is greater. The insurance shall include contractual liability insurance applicable to the CONTRACTOR's obligations under this contract.

The level required in Section 2 of the Supplementary General Conditions will not be reduced for any reason.

## ARTICLE 6 - AVAILABILITY OF LAND; REFERENCE POINTS

### 6.1 Rights-of-Way:

Lands or Rights-of-Way for the work to be constructed under the Contract will be provided by the CITY. Nothing contained in the Contract Documents shall be interpreted as giving the CONTRACTOR exclusive occupancy of the lands or Rights-of-Way provided. Any additional lands or Rights-of-Way required for construction operations shall be provided by the CONTRACTOR at his own expense; provided, that the CONTRACTOR shall not; and the CITY nor the ENGINEER shall not be liable for any claims or damages resulting from the CONTRACTOR's unauthorized trespass or use of any such properties.

### 6.2 Permits:

When required by Article 2.16 of the Section II – Special Terms and Conditions, the CONTRACTOR shall secure, from the agencies having jurisdiction, the necessary permits to create obstructions, to make excavations if required under the Contract, and to otherwise encroach upon Rights-of-Way, and to present evidence to the ENGINEER that such permission has been granted, before work is commenced. Regulations and requirements of all agencies concerned shall be strictly adhered to in the performance of the Contract. The enforcement of such requirements under the Contract shall not be made the basis for additional compensation.

### 6.3 Lines and Grades:

The CONTRACTOR shall furnish all grades and all other lines required for the proper execution of the work.

## ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES

### 7.1 Laws/Regulations to Be Observed:

The CONTRACTOR shall familiarize himself and comply with all Federal, State, County and CITY laws, by-laws, ordinances or regulations controlling the action or operation of those engaged or employed in the work or affecting material used, and govern himself in accordance with them. He shall indemnify and save harmless the CITY and all of its officers, agents and employees against any claims or liability arising from or based on the violation of any such laws, by-laws, ordinances, regulations, orders or decrees, whether by himself or his employees or Subcontractors.

### 7.2 Indemnification of City:

- (a) Refer to ARTICLE 1.46 – INDEMNIFICATION AND HOLD HARMLESS AGREEMENT of Section IV – General Terms and Conditions.
- (b) Refer to ARTICLE 1.47 – PATENT AND COPYRIGHT INDEMNIFICATION of Section IV – General Terms and Conditions.
- (c) The provisions of (a) and (b) above shall survive the expiration or earlier termination of the Contract Documents.

### 7.3 Guarantee of Payments:

The CONTRACTOR guarantees the payments of all just claims for materials, supplies, tools, labor and other just claims against him, or any Subcontractor in connection with this Contract, and his bond will not be released by final acceptance and payment by the CITY unless all such claims are paid or released.

### 7.4 Permits and Licenses:

The CONTRACTOR shall obtain all permits and licenses required by the Contract Documents. A copy of the permit(s) and such conditions and requirements thereon are a part of the Contract Documents. Failure to obtain such permits or licenses shall subject the CONTRACTOR to the provisions of the South Florida Building Code, Broward Edition.



## 7.5    Emergencies:

In emergencies affecting the safety or protection of persons or the work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from ENGINEER or CITY, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice of any significant changes in the work or deviations from the Contract Documents caused thereby.

## 7.6    Substitutes or "Or Equal":

### A.      Substitutes or "Or-Equal" Materials or Equipment:

Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by the ENGINEER if sufficient information submitted by the CONTRACTOR to allow the ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named. The ENGINEER will be allowed 30 days within which to evaluate each proposed substitute. The ENGINEER will be the sole judge of acceptability, and NO SUBSTITUTE WILL BE ORDERED, INSTALLED OR UTILIZED WITHOUT THE ENGINEER'S PRIOR WRITTEN ACCEPTANCE which will be evidenced by either a Change Order or an approved set of Shop Drawings. Requests for review of substitute items of material and equipment will not be accepted by the ENGINEER from anyone other than the CONTRACTOR. The procedure for review by the ENGINEER is as follows:

If the CONTRACTOR wishes to furnish or use a substitute item of material or equipment, the CONTRACTOR shall make written application to the ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. In addition, the application shall

1. State that the evaluation and acceptance of the proposed substitute will not prejudice the CONTRACTOR's achievement of completion on time.
2. State whether or not acceptance of the substitute for use in the WORK will require a change in any of the Contract Documents to adapt design to the proposed substitute. The CONTRACTOR shall be responsible for any extra design adaptation costs associated with a proposed substitute.
3. State whether or not incorporation or use of the substitute in connection with the work is subject to payment of any license fee or royalty.
4. Provide complete substitute identification and description, including manufacturer's and local distributor's name and address, performance and test data, and reference standards.

5. Provide samples, as required by ENGINEER.
6. Provide name and address of similar projects on which the proposed substitute has been used, and date of installation.
7. Identify all variations of the proposed substitute from that specified.
8. Indicate available maintenance, repair and replacement service.
9. Submit an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other Contractors affected by the resulting change. The CONTRACTOR shall be responsible for the costs of redesign and claims of other Contractors.
10. Provide any additional data about the proposed substitute as the ENGINEER may require of the CONTRACTOR.

B. Substitute means, method, technique, sequence or procedure of construction:

If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, the CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to the ENGINEER, if the CONTRACTOR submits sufficient information to allow the ENGINEER to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by the ENGINEER will be similar to that provided in Paragraph 7.6 A.

- C. The CITY may require the CONTRACTOR to furnish at the CONTRACTOR's expense, a special performance guarantee or other surety with respect to any substitute.
- D. The ENGINEER will record time required by the ENGINEER and/or the ENGINEER's consultants in evaluating substitutions proposed by the CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not the ENGINEER accepts a proposed substitute, THE CONTRACTOR SHALL REIMBURSE THE CITY FOR THE CHARGES OF THE ENGINEER AND THE ENGINEER's CONSULTANTS FOR EVALUATING EACH PROPOSED SUBSTITUTE.
- E. Any and all costs which result from changes to/adaptations of the work shall be paid by the CONTRACTOR including but limited to design, materials, installation, etc.

## 7.7 Shop Drawings:

Shop Drawing submittals shall be as follows:

- A. The CONTRACTOR shall submit a sufficient number of copies of each Shop Drawing to enable the ENGINEER to retain three copies unless additional copies are specified in the Contract Documents. Resubmissions of Shop Drawings shall be made in the same quantity until final approval is obtained.
- B. The CONTRACTOR shall submit Shop Drawings for all equipment, apparatus, machinery, fixtures, piping, fabricated structures, manufactured articles and structural components Manufacturer's Certified Affidavit that the item supplied complies with the design Specifications, and all other submittal requirements.
- C. Shop Drawings for structural components, electrical or mechanical systems shall be Certified by a Registered Engineer of the discipline involved.
- D. The CONTRACTOR shall thoroughly review and check the Shop Drawings, and each and every copy shall show his approval thereon. If the Shop Drawings show or indicate departures from the Contract requirements, the CONTRACTOR shall make specific mention thereof in his letter of transmittal. Failure to point out such departures shall not relieve the CONTRACTOR from his responsibility to comply with the Drawings and Specifications.
- E. No approval will be given to partial submittals of Shop Drawings for items which interconnect and/or are interdependent. It is the CONTRACTOR's responsibility to assemble the Shop Drawings for all such interconnecting and/or interdependent items, check them himself and then make one submittal to the ENGINEER along with his comments as to compliance, non-compliance, or features requiring special attention.
- F. If catalog sheets or prints of manufacturer's standard drawings are submitted as Shop Drawings, any additional information or changes on such Drawings shall be typewritten or lettered in ink.
- G. The CONTRACTOR shall keep one set of Shop Drawings marked with the ENGINEER's approval at the job site at all times.
- H. Where a Shop Drawing or sample is required by the Specifications, no related work shall be commenced until the submittal has been reviewed and approved by the ENGINEER.
- I. Approval of the Shop Drawings shall constitute approval of the subject matter thereof only, and not of any structure, material, equipment or apparatus shown or indicated. The approval of the Shop Drawings will be general and shall not relieve the CONTRACTOR of responsibility for the accuracy of such Drawings, nor for the proper fitting and construction of the work, nor for the furnishing of materials or work required by the contract and not indicated on the Drawings. Approval shall not relieve the CONTRACTOR from responsibility for errors or omissions of any sort on the Shop Drawings.

## 7.8

### Personnel:

#### A. Supervision and Superintendence:

1. The CONTRACTOR shall supervise 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. The CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but the CONTRACTOR shall not be solely responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. The CONTRACTOR shall be responsible to see that the finished work complies accurately with the Contract Documents.
2. The CONTRACTOR shall keep on the work at all times during its progress a competent resident Superintendent fluent in both oral and written communication in the English language, who shall not be replaced without written notice to the ENGINEER except under extraordinary circumstances. The Superintendent will be the CONTRACTOR's representative at the site and shall have authority to act on behalf of the CONTRACTOR. All communications given to the Superintendent shall be as binding as if given to the CONTRACTOR.

#### B. Workforce:

1. None but skilled workers shall be employed on work requiring special qualifications. When required in writing by the ENGINEER, the CONTRACTOR or any Subcontractor shall discharge any person who is, in the opinion of the ENGINEER, incompetent, disorderly or otherwise unsatisfactory, and shall not again employ such discharged person on the work except with the consent of the ENGINEER. Such discharge shall not be the basis of any claim for damages against the CITY or any CITY agents.
2. With respect to all skilled, semi-skilled and unskilled workers employed on the Project under this Contract, preference in employment shall be given to persons residing in Hollywood when such persons are available and qualified to perform the work to which the employment relates. No person shall be employed in violation of the State or National Labor Laws. No person under the age of 16 years shall be employed on a Project under the Contract. No person whose age or physical condition is such as to make his employment dangerous to his health or safety or to the health or safety of others shall be employed on the Project under this Contract; provided that this shall not operate against the employment of physically handicapped persons, otherwise employable where such persons may be safely assigned to work which they can ably perform. No person currently serving sentences in a penal or correctional institution and no inmate of an institution for

mentally defective shall be employed on a Project under this Contract without specific approval of the ENGINEER.

3. No discrimination shall be made in the employment of persons on the work by the CONTRACTOR or by any Subcontractor under him, because of the race, color, sex, age or religion of such persons, and there shall be full compliance with the provisions of applicable State and Federal laws in this regard.

#### 7.9 Safety and Protection:

##### A. Federal Safety and Health Regulations:

The CONTRACTOR and Subcontractors shall comply with the provisions of the Occupational Safety and Health Standards, promulgated by the Secretary of Labor under the "Occupational Safety and Health Act of 1970".

##### B. Responsibilities:

The CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work. The 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 employees on the work and other persons who may be affected thereby.
2. All the work and all materials or equipment to be incorporated therein, whether in storage on or off the site.
3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocating or replacement in the course of construction.

##### C. Designated Safety Officer:

The CONTRACTOR shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the CONTRACTOR's Superintendent unless otherwise designated in writing by the CONTRACTOR to the ENGINEER.

##### D. Protection of the Work:

Until acceptance of the work by the CITY, it shall be under the charge and in care of the CONTRACTOR and he shall take every necessary precaution against injury or damage to the work by action of the elements or from the execution or from the non-execution of the work. The CONTRACTOR shall rebuild, restore and make good, at his own expense, all injuries or damages to any portion of the work occasioned by any of the above causes before its completion and acceptance.

7.10 Traffic Control, Public Safety and Convenience:

- A. The CONTRACTOR shall at all times conduct his work so as to assure the least possible obstruction to traffic and inconvenience to the general public, and provide adequate protection of persons and property in the vicinity of the work.
- B. WHEN THE NORMAL FLOW OF TRAFFIC WILL BE IMPAIRED OR DISRUPTED IN ANY MANNER ON ANY STREET, THE CONTRACTOR SHALL NOTIFY THE POLICE TRAFFIC SERGEANT AT 921-3610 AT LEAST 48 HOURS IN ADVANCE.
- C. Streets shall not be closed, except when and where directed by the ENGINEER, and whenever a street is not closed the work must be conducted with the provision for safe passageway for traffic at all times. The CONTRACTOR shall make all necessary arrangements concerning maintenance of traffic and selection of detours required.
- D. When permission has been granted to close an existing roadway, or portion thereof, the CONTRACTOR shall furnish and erect signs, barricades, lights, flags and other protective devices as necessary subject to the approval of the ENGINEER. From sunset to sunrise, the CONTRACTOR shall furnish and maintain as many yellow lights as the ENGINEER may direct.
- E. During working hours the CONTRACTOR shall furnish watchmen in sufficient numbers to protect and divert the vehicular and pedestrian traffic from working areas closed to traffic, or to protect any new work. Failure to comply with this requirement will result in the ENGINEER shutting down the work until the CONTRACTOR shall have provided the necessary protection.
- F. No separate payment will be made for such signs, barricades, lights, flags, watchmen or other protective devices as required, with all costs thereof deemed to be included in the prices bid for the various items scheduled in the bid.
- G. Sidewalks, gutters, drains, fire hydrants and private drives shall, in so far as practicable, be kept in condition for their intended uses. While the work is actually going on at any location, as much as half the street width at that location may be barricaded to exclude traffic entirely, but street traffic shall not be obstructed needlessly. Fire hydrants on or adjacent to the work shall be kept accessible to fire apparatus at all times, and no material or obstruction shall be placed within ten feet of any such hydrant.
- H. Construction material stored upon the public street shall be placed so as to cause as little obstruction to the general public as is reasonably possible.

#### 7.11 Use of Explosives:

When the use of explosives is necessary for the prosecution of the work, the CONTRACTOR shall observe the utmost care so as not to endanger life or property, and whenever directed, the number and size of charges shall be limited. All explosives shall be stored in a secure manner and all such storage places shall be marked clearly "DANGEROUS EXPLOSIVES" and shall be in care of a competent watchman at all times. The CONTRACTOR must familiarize himself with all laws and ordinances pertaining thereto, and govern himself and his employees accordingly.

#### 7.12 Loading of Structures:

The CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the CONTRACTOR subject any part of the work or adjacent property to stresses or pressures that will endanger it.

#### 7.13 Concerning Subcontractors:

- A. The CONTRACTOR, with his own forces, shall perform no less than 25% of the work as determined by the Contract price. Each Subcontractor shall be properly licensed for the type of work he is to perform.
- B. A copy of each Sub-Contract shall be filed promptly with the ENGINEER upon request. Each Sub-Contract shall contain a reference to the Contract between the CITY and the CONTRACTOR, and the terms and conditions of the Contract shall be made a part of each Sub-Contract. Each Sub-Contract shall provide for annulment of same by the CONTRACTOR upon written order of the ENGINEER if the Subcontractor fails to comply with the requirements of this Contract.
- C. The CONTRACTOR shall be responsible to the CITY and ENGINEER for the acts and omissions of his Sub- Contractors and their employees to the same extent as he is responsible for the acts and omissions of his own employees. Nothing contained in this Contract shall create any contractual relationship between any Subcontractor and the CITY or ENGINEER nor relieve the CONTRACTOR of any liability or obligation under this Contract.

#### 7.14 Materials and Equipment:

- A. Material for the Work:
  - 1. The CONTRACTOR shall furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and sanitary facilities and all other facilities and incidentals necessary for the execution, testing, initial operation and completion of the work.
  - 2. Unless otherwise specified, shown or permitted by the ENGINEER, all material and equipment incorporated in the work shall be new and of current manufacture. The ENGINEER may request the CONTRACTOR to furnish manufacturer's certificates to this effect.



3. The ENGINEER may require any or all materials to be subjected to test by means of samples or otherwise, at production points or after delivery. The CONTRACTOR shall afford such facilities as the ENGINEER may require for collecting and forwarding samples, which samples shall be furnished by the CONTRACTOR without charge. The CONTRACTOR shall furnish evidence satisfactory to the ENGINEER that the materials and finished articles have passed the required test prior to the incorporation of such materials and finished articles in the work. Unless otherwise provided, the cost of such inspection and testing shall be as provided in Article 12.2.
4. All packaged manufactured products for use on the work shall be delivered to the work in their original, unopened packages, bearing thereon the manufacturer's name and the brand name of the product.
5. Wherever any product or material is selected to be used on the work, all such products or material shall be of the same brand and manufacture throughout the work.
6. All equipment, tools and machinery used for handling material or executing any part of the work shall be maintained in a satisfactory working condition. All equipment utilized on any portion of the work shall be such that no injury to personnel, the work, adjacent property or other objects will result from its use.
7. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier or distributor, except as otherwise provided in the Contract Documents.

B. Storage of Materials:

1. All materials and equipment including that ordered by the CITY designed for permanent installation in the work shall be properly stored by the CONTRACTOR to insure protection against deterioration of any type. These materials shall be placed as to cause a minimum of inconvenience to other contractors on the work and to the public. The storage piles shall be arranged to facilitate inspections, and any deterioration shall be grounds for rejection.
2. Materials stored in public Rights-of-Way, shall be stored in such a manner so as to be compatible with the Traffic Control requirements set forth in Paragraph 7.10. Materials shall be stored so as not to deny access to public or private property. Stored materials shall be adequately marked with barricades and/or flashing warning lights, where necessary, so as to protect the materials from damage and to protect the public health, safety and welfare.
3. Lawns, grass plots or other private property shall not be used for storage purposes without written permission of the Owner or Lessee of that private



property. Should the CONTRACTOR desire to store equipment or materials of any kind on the property of the CITY, he must obtain permission from the ENGINEER. The CITY reserves the right to order materials to be removed or relocated in such approved storage areas, if necessary.

4. The protection of stored materials shall be the CONTRACTOR's responsibility and the CITY OF HOLLYWOOD shall not be liable for any loss of materials, by theft or otherwise, nor for any damage to the stored materials.

C. Salvage of Materials and Equipment:

The CITY reserves the right to retain title to all soil, sand, stone, gravel, equipment, machinery or any other material that was a part of the structure, site or Right- of-Way and which was developed from excavations or other operations connected with the work. The CONTRACTOR will be permitted to use in the work, without charge, any such material which meets the requirements of the Contract Documents. For that material which the CITY desires to retain the CONTRACTOR shall, at his expense, transfer to a site within the CITY as designated by the ENGINEER. That material which the CITY does not wish to retain shall be the property of the CONTRACTOR and removed from the site at CONTRACTOR's expense.

7.15 Temporary Utilities:

The CONTRACTOR shall provide and maintain at his own expense, all water, power, telephone and sanitary facilities as required to comply with State and/or local Codes and Regulations. If water, including that for testing is required, it is the CONTRACTOR's responsibility to arrange through the CITY Water Department for a water meter. A deposit to be paid by the CONTRACTOR is required for meter rental and all water shall be purchased at the prevailing rate.

7.16 Review of Records:

The CONTRACTOR shall allow and permit the ENGINEER or his duly authorized representative to inspect and review all payrolls, records of personnel, conditions of employment, invoice of materials, books of accounts and other relevant data and records pertinent to the CONTRACT and Sub-Contracts.

7.17 Use of Premises:

CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workmen to areas permitted by law, ordinances, permits or required by the Contract Documents, and shall not interfere with the premises or operation of the City Utilities facilities with construction equipment or other materials or equipment. Construction which interferes with Plant Operations shall be fully coordinated and approved by the ENGINEER.

7.18 CONTRACTOR's Daily Reports:

Except where otherwise provided, the CONTRACTOR shall complete a daily report indicating manpower, major equipment, Subcontractors, etc., involved in the performance of the work. The daily report shall be completed on forms approved by the ENGINEER, and shall be submitted to the ENGINEER at the conclusion of each work day.

7.19 Record Documents:

The CONTRACTOR shall keep one record copy of all Specifications, Drawings, Addenda, Modifications, Shop Drawings and samples at the site, in good order and annotated to show all changes made during the construction process. These shall be available to ENGINEER for examination and shall be delivered to ENGINEER upon completion of the work.

7.20 Cleanliness of the Site:

During the progress of the work, The CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the work. At the completion of the work the CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials, and shall leave the site clean and ready for occupancy by the CITY. The CONTRACTOR shall restore to their original condition those portions of the site not designated for alteration by the Contract Documents.

7.21 Dust Control:

It shall be the CONTRACTOR's responsibility to control dust by watering as directed by the ENGINEER. The water used shall be paid for by the CONTRACTOR. Should the CONTRACTOR fail to control dust to the satisfaction of the ENGINEER, the CITY will control the dust by whatever means the CITY desires and the CONTRACTOR shall pay all expenses incurred by the CITY associated with the control of the dust.

7.22 Continuing the Work:

The CONTRACTOR shall carry on the work and maintain the Progress Schedule during all disputes or disagreements with the CITY. No work shall be delayed or postponed pending resolution of any disputes or disagreements, except as the CONTRACTOR and the CITY may otherwise agree in writing.

7.23 Indemnification:

In consideration of the amount listed in the Bid Form and other valuable consideration, the Contractor shall defend, indemnify and save harmless the CITY, its officers, agents, and employees from or on account of any personal injury, loss of life or damage to property received or sustained by any person or persons during or on account of any operations connected with the construction of this Project; or by or in consequence of any negligence (excluding negligence of the CITY), in connection with the same; or by use of any improper materials or by or on account of any use of any improper materials or by or on account of any act or omission of the said Contractor or his subcontractor, agents, servants or employees. Contractor agrees to indemnify and save harmless the

CITY against any liability arising from or based upon the violation of any federal, state, county or city laws, by-laws, ordinances or regulations by the Contractor, his subcontractor, agents, servants or employees. Contractor further agrees to indemnify and save harmless the CITY from all such claims and fees, and from any and all suits and actions of every name and description that may be brought against the CITY on account of any claims, fees, royalties, or costs for any invention or patent, and from any and all suits and actions that may be brought against the CITY for the infringement of any and all patents or patent rights claimed by any person, firm, or corporation.

The indemnification provided above shall obligate the Contractor to defend at his own expense or to provide for such defense, at the CITY's option, any and all claims or liability and all suits and actions of every name and description that may be brought against the Owner which may result from the operations and activities under this Contract whether the construction operations be performed by the Contractor, his subcontractor or by anyone directly or indirectly employed by either.

Nothing in this indemnification shall be deemed to affect the rights, privileges or immunities of the CITY as set forth in Section 768.28, Florida Statutes.

The CITY will pay to the Contractor the specific consideration, in the amount stated in the Bid Form. The Contractor shall acknowledge the receipt of payment and other good and valuable consideration from the Owner which has been paid to him as specific consideration for the indemnification provided herein and in accordance with the provisions of Chapter F.S.A., Section 725.06.

## ARTICLE 8 - CITY'S RESPONSIBILITIES

### 8.1 Communications:

The CITY shall issue all communications to the CONTRACTOR through the ENGINEER.

### 8.2 Furnish Contract Documents:

The CITY shall furnish the number of Contract Documents as specified in the Supplementary General Conditions to the CONTRACTOR at no cost. Referenced Standard Specifications Manuals, guidebooks, etc., will not be provided.

### 8.3 Furnish Right-of-Way:

The CITY shall furnish the necessary land or Right-of-Way on which the work is to be accomplished, and will provide lines and grades as specified in Article 6.

### 8.4 Timely Delivery of Materials:

The CITY shall be responsible for the delivery of any CITY furnished material, equipment or labor as specified in the Contract Documents.

## ARTICLE 9 - ENGINEER'S STATUS

### 9.1 Authority of the Engineer:

- A. The general supervision of the execution of this Contract is vested in the ENGINEER who is the CITY's sole representative during the construction period. The instructions of the ENGINEER are to be strictly and promptly followed in every case. The CONTRACTOR's representative (Article 7.8 A. 1.) shall be responsible for the execution of any instructions given by the ENGINEER during the absence of the CONTRACTOR.
- B. The ENGINEER is the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the work. Claims, disputes and other matters relating to the acceptability of work or requirements of the Contract Documents shall be referred in writing to the ENGINEER within 15 days of the event, with a request for a formal decision, which the ENGINEER will render in writing within a reasonable time. This rendering of a decision by the ENGINEER will be a condition precedent to any exercise by the CITY or CONTRACTOR of rights or remedies as either may otherwise have under the Contract Documents or at law in respect to any such claim, dispute or other matter.
- C. The ENGINEER will issue with reasonable promptness any written clarifications or interpretations of the Contract Documents as he shall deem necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If, as a result of a clarification or interpretation, either the CONTRACTOR or ENGINEER believes a Change Order is justified, it shall be submitted.
- D. The ENGINEER has approval authority over the acceptability of all material or equipment furnished, Shop Drawings, Change Orders, work performed and the rate of progress of the work. Verification of the quantities of work performed for pay purposes is the responsibility of the ENGINEER.
- E. The ENGINEER also has the authority to disapprove or reject work which is defective, and may require special inspection or testing of the work, whether or not it is fabricated, installed or completed.
- F. The ENGINEER has the authority to suspend the work wholly or in part for such period or periods as may be deemed necessary, due to the unsuitable prosecution of the work, or for such time as is necessary due to failure on the part of the CONTRACTOR to carry out orders given or perform any or all provisions of the Contract. The CONTRACTOR shall not suspend the work and shall not remove any equipment, tools, lumber or other materials without the written permission of the ENGINEER.

## 9.2 Access to the Work:

The ENGINEER is to have free access to the materials and work at all times for laying out, measuring or inspecting same, and the CONTRACTOR is to afford him all necessary facilities and assistance for so doing.

## 9.3 Limitations on The ENGINEER's Responsibilities:

- A. Neither the ENGINEER's authority to act under this Article or elsewhere in the Contract Documents nor any decision made by the ENGINEER 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 manufacturer, fabricator, supplier or distributor or any of their agents or employees or any other person performing any of the work.
- B. Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper" or "satisfactory" or adjectives of like effect or import are used, to describe requirement, direction, review or judgment of the ENGINEER as to the work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective never indicates that the ENGINEER has authority to supervise or direct performance of the work.
- C. The ENGINEER will not be responsible for the CONTRACTOR's means, methods, techniques, sequences or procedures of construction, nor the safety precautions and programs incident thereto, and the ENGINEER will not be responsible for the CONTRACTOR's failure to perform the work in accordance with the Contract Documents.
- D. The ENGINEER will not be responsible for the acts or omissions of the CONTRACTOR or of any Subcontractors, or of the agents or employees of any CONTRACTOR or subcontractor, or of any other persons at the site or otherwise performing any of the work.

## 9.4 Inspectors:

- A. Inspectors employed by the CITY assist the ENGINEER in ascertaining the work conforms to the Contract Documents and are authorized to inspect all work done and material furnished as representatives of the ENGINEER. Inspectors shall be stationed at the site of the work to report to the ENGINEER as to the progress of the work and the quality of workmanship and material.
- B. In case of any dispute arising between the CONTRACTOR and the Inspector, the Inspector shall have the authority to reject material or to suspend the work until the question of issue can be referred to and decided upon by the ENGINEER.
- C. If the CONTRACTOR refuses to suspend operation on verbal order, the Inspector shall issue a written order giving the reason for shutting down the work.

After placing the order in the hands of the man in charge, the Inspector shall immediately leave the job. work done during the absence of the Inspector, after such written notice, will not be accepted nor paid for.

- D. Inspectors are not authorized to revoke, alter, enlarge, relax or release any requirements of these Contract Documents, nor to issue instructions contrary to them. Inspectors shall in no case act as foreman or perform other duties for the CONTRACTOR, nor interfere with management of the work by the latter. Any instructions which Inspectors may give the CONTRACTOR shall in no way be construed as releasing the CONTRACTOR from fulfillment of the terms of the Contract.
- E. The payment of any compensation, whatever may be its character or form, or the giving of any gratuity, or the granting of any valuable favor, by the CONTRACTOR to any Inspector, directly or indirectly, is strictly prohibited and any such act on the part of the CONTRACTOR will constitute a violation of this Contract and may subject the CONTRACTOR to other penalties provided for by law or ordinance.

#### 9.5 Inspections:

- A. The ENGINEER will make, or have made, such inspections and tests as he deems necessary to assure that the work is being accomplished in accordance with the requirements of the Contract. In the event such Inspections or tests reveal non-compliance with the requirements of the Contract, the CONTRACTOR shall bear the cost of such corrective measures as well as the cost of subsequent reinspection and retesting.
- B. Work done in the absence of a prescribed inspection may be required to be removed and replaced under proper inspection. The entire cost of removal and replacement, including the cost of all material which may be furnished by the CITY and used in the work thus removed, shall be borne by the CONTRACTOR, regardless of whether the work removed is found to be defective or not. Work covered up without the authority of the ENGINEER, shall, upon order of the ENGINEER, be uncovered to the extent required, and the CONTRACTOR shall similarly bear the entire cost of performing all the work and furnishing all the material necessary for the removal of the covering and its subsequent replacement.
- C. Unless otherwise provided, the cost of inspection and all inspection fees imposed by public agencies other than the fees associated with the issuance of the Master Building Permit by the City of Hollywood shall be paid by the CONTRACTOR.
- D. No inspection nor any failure to inspect at any time or place shall relieve the CONTRACTOR from any obligation to perform all of the work in strict conformance with the requirements of the Contract Documents.

## ARTICLE 10 - CHANGES IN THE WORK/CONTRACT PRICE

### 10.1 Changes in the Work or Terms of Contract Documents:

- A. Without invalidating the Contract and without notice to any surety CITY reserves and shall have the right, from time to time to make such increases, decreases or other changes in the character or quantity of the Work as may be considered necessary or desirable to complete fully and acceptably the proposed construction in a satisfactory manner. Any extra or additional work within the scope of this Project must be accomplished by means of appropriate Clarifications, Field Orders, or Change Orders.
- B. Any changes to the terms of the Contract Documents must be contained in a written document, executed by the parties hereto, with the same formality and of equal dignity prior to the initiation of any work reflecting such change.

This section shall not prohibit the issuance of Change Orders executed only by CITY as hereinafter provided.

### 10.2 Supplemental Instructions - Clarifications:

- A. The CITY, through the ENGINEER, shall have the right to approve and issue Clarifications setting forth written interpretations of the intent of the Contract Documents and ordering minor changes in Work execution, providing the Clarifications involve no change in the Contract Price or the Contract Time.
- B. The ENGINEER shall have the right to approve and issue Clarifications setting forth written orders, instructions, or interpretations concerning the Contract Documents or its performance, provided such Clarifications involve no change in the Contract Price or the Contract Time.

### 10.3 Field Orders / Change Orders:

- A. Changes in the quantity or character of the Work within the scope of the Project which are not properly the subject of Clarifications, including all changes resulting in changes in the Contract Price or the Contract Time, shall be authorized only by Field Orders or Change Orders approved in advance and issued in accordance with the provisions of the CITY Procurement Code, as amended from time to time.
- B. CONTRACTOR shall not start work on any changes requiring an increase in the Contract Price or the Contract Time until a Field Order or Change Order setting forth the adjustments is approved by the CITY. Upon receipt of a Change Order CONTRACTOR shall promptly proceed with the work set forth within the document.



- C. Field Orders shall be issued for change in Contract Price related to Cost Allowances specifically included on the Proposal Bid Form. Change Orders shall be issued when required for all other Contract Price Changes. Hereinafter, the term "Change Order(s)" shall be used to include "Change Orders" and "Field Orders" with the exception that Field Order shall not be used for any Contract Time adjustments.
- D. In the event satisfactory adjustment cannot be reached for any item requiring a change in the Contract Price or Contract Time, and a Change Order has not been issued, CITY reserves the right at its sole option to either terminate the Contract as it applies to the items in question and make such arrangements as may be deemed necessary to complete the disputed work; or the work shall be performed on the "cost of work" basis as described in Article 10.4.
- E. On approval of any Contract change increasing the Contract Price, CONTRACTOR shall ensure that the performance bond and payment bond are increased so that each reflects the total Contract Price as increased.
- F. Under circumstances determined necessary by CITY, Change Orders may be issued unilaterally by CITY.

#### 10.4 Value of Change Order Work:

- A. The value of any work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:
  - A.1 Where the work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of items involved, subject to the provisions of Article 10.4.G.
  - A.2 By mutual acceptance of a lump sum which CONTRACTOR and CITY acknowledge contains a component for overhead and profit.
  - A.3 On the basis of the "cost of work," determined as provided in this Article, plus a CONTRACTOR's fee for overhead and profit which is determined as provided in Article 10.4.D.
- B. The term "cost of work" means the sum of all direct costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work described in the Change Order. Except as otherwise may be agreed to in writing by CITY, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in Article 10.4.C.
  - B.1 Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the work described in the Change Order under schedules of job classifications agreed upon by CITY and

CONTRACTOR. Payroll costs for employees not employed full time on the work covered by the Change Order 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' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay application thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing the work after regular working hours, on Sunday or legal holidays shall be included in the above to the extent authorized by CITY.

- B.2 Cost of all materials and equipment furnished and incorporated in the work, including costs of transportation and storage thereof, and manufacturers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless CITY deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to CITY. All trade discounts, rebates and refunds, and all returns from sale of surplus materials and equipment shall accrue to CITY and CONTRACTOR shall make provisions so that they may be obtained. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by CITY with the advice of ENGINEER and the costs of transportation, loading, unloading, installation, dismantling and removal thereof, all in accordance with the terms of said agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the work.
- B.3 Payments made by CONTRACTOR to Subcontractors for work performed by Subcontractors, If required by CITY, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR and shall deliver such bids to CITY who will then determine, with the advice of ENGINEER, which bids will be accepted. If the 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 shall be determined in the same manner as CONTRACTOR'S cost of the work. All Subcontractors shall be subject to the other provisions of the Contract Documents insofar as applicable.
- B.4 Cost of special engineers, including, but not limited to, engineers, architects, testing laboratories, and surveyors employed for services specifically related to the performance of the work described in the Change Order.

- B.5 Supplemental costs including the following:  
The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the work except for local travel to and from the site of the work.

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 workmen, which are consumed in the performance of the work, and cost less market value of such items used but not consumed which remains the property of CONTRACTOR.

Sales, use, or similar taxes related to the work, and for which CONTRACTOR is liable, imposed by any governmental authority. Deposits lost for causes other than CONTRACTOR's negligence; royalty payments and fees for permits and licenses. The cost of utilities, fuel, and sanitary facilities at the site. Receipted minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the work. Cost of premiums for additional bonds and insurance required because of changes in the work.

- C. The term "cost of the work" shall not include any of the following:

- C.1 Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in its principal or a branch office for general administration of the work and not specifically included in the agreed-upon schedule of job classifications referred to in this Article, all of which are to be considered administrative costs covered by CONTRACTOR's fee.
- C.2 Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.
- C.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.
- C.4 Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same, except for additional bonds and insurance required because of changes in the work.
- C.5 Costs due to the negligence or neglect of CONTRACTOR, any Subcontractors, 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.

C.6 Other overhead or general expense costs of any kind and the cost of any item not specifically and expressly included in this Section.

D. CONTRACTOR's fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

D.1 A mutually acceptable fixed fee or if none can be agreed upon,

D.2 A fee based on the following percentages of the various portions of the cost of the work:

For costs incurred under Article 10.4.B.1, CONTRACTOR's fee shall not exceed ten percent (10%).

For costs incurred under Article 10.4.B.3 and B.4, CONTRACTOR's fee shall not exceed seven and one half percent (7.5%); and if a subcontract is on the basis of cost of the work plus a fee, the maximum allowable to the Subcontractor as a fee for overhead and profit shall not exceed ten percent (10%);

No fee shall be payable on the basis of costs itemized under Article 10.4.B.5 and Article 10.4.C.

E. The amount of credit to be allowed by CONTRACTOR to CITY for any such change which results in a net decrease in cost, will be the amount of the actual net decrease. When both additions and credits are involved in anyone change, the combined overhead and profit shall be figured on the basis of the net increase, if any, however, CONTRACTOR shall not be entitled to claim lost profits for any Work not performed.

F. Whenever the cost of any work is to be determined pursuant to Articles 10.4.B and 10.4.C, CONTRACTOR will submit in a form acceptable to CONSULTANT an itemized cost breakdown together with the supporting data.

G. Where the quantity of any item of the Work that is covered by a unit price is increased or decreased by more than twenty percent (20%) from the quantity of such work indicated in the Contract Documents, an appropriate Change Order shall be issued to adjust the unit price, if warranted.

H. Whenever a change in the Work is to be based on mutual acceptance of a lump sum, whether the amount is an addition, credit or no change-in-cost, CONTRACTOR shall submit an initial cost estimate acceptable to ENGINEER and CITY.

H.1 Breakdown shall list the quantities and unit prices for materials, labor, equipment and other items of cost.

H.2 Whenever a change involves CONTRACTOR and one or more Subcontractors and the change is an increase in the Contract Price,

overhead and profit percentage for CONTRACTOR and each Subcontractor shall be itemized separately.

- I. Each Change Order must state within the body of the Change Order whether it is based upon unit price, negotiated lump sum, or "cost of the work."

10.5 Notification and Claim for Change of Contract Price:

- A. Any claim for a change in the Contract Price shall be made by written notice by CONTRACTOR to the CITY and to ENGINEER within five (5) calendar days of the commencement of the event giving rise to the claim and stating the general nature and cause of the claim. Thereafter, within twenty (20) calendar days of the termination of the event giving rise to the claim, written notice of the extent of the claim with supporting information and documentation shall be provided unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim and such notice shall be accompanied by CONTRACTOR's written notarized 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. All claims for changes in the Contract Price shall be in accordance with Articles 10.3 and 10.4 hereof, if CITY and CONTRACTOR cannot otherwise agree. **IT IS EXPRESSLY AND SPECIFICALLY AGREED THAT ANY AND ALL CLAIMS FOR CHANGES TO THE CONTRACT PRICE SHALL BE WAIVED IF NOT SUBMITTED IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THIS SECTION.**

10.6 Notice of Change:

If notice of any change affecting the general scope of the work or change in the Contract Price is required by the provisions of any Bond to be given to the Surety, it will be CONTRACTOR's responsibility to so notify the Surety, and the amount of each applicable Bond shall be adjusted accordingly. The CONTRACTOR shall furnish proof of such adjustment to the CITY. Failure of the CONTRACTOR to obtain such approval from the Surety may be a basis for termination of this Contract by the CITY.

10.7   Records:

The CONTRACTOR's representative and the ENGINEER shall compare records of extra work done at the end of the day. Such records shall be made in duplicate upon a form provided for such purpose by the ENGINEER and shall be signed by both the Inspector and the CONTRACTOR's representative, one copy being submitted to the ENGINEER and the other being retained by the CONTRACTOR.

10.8   Cancelled Items and Payments Therefore:

The CITY COMMISSION shall have the right to cancel those portions of the Contract relating to the construction of any item provided therein. Such cancellation shall entitle the CONTRACTOR to payment in a fair and equitable amount covering all items of cost incurred by him prior to the date of cancellation or suspension of the work. The CONTRACTOR shall be allowed a profit percentage on the materials used and on construction work actually performed, at the same rates as provided for "Extra Work", but no allowance will be made for anticipated profits. Acceptable materials ordered by the CONTRACTOR or delivered on the work, prior to date of such cancellation or suspension, may be purchased from the CONTRACTOR by the CITY at actual cost and shall thereupon, become property of the CITY, or may be returned to the manufacturer for a reasonable restocking charge.

10.9   Full Payment:

The Compensation herein provided shall be received and accepted by the CONTRACTOR as payment in full for all extra work done or costs incurred in event of cancellation.

## ARTICLE 11 - CHANGES IN THE CONTRACT TIME

### 11.1 Change Order:

The Contract Time may only be changed by a Change Order. A FULLY EXECUTED CHANGE ORDER MUST EXIST PRIOR TO EXTENSION OR SHORTENING OF THE CONTRACT TIME.

### 11.2 Notification and Claim for Change of Contract Time:

- A. Any claim for a change in the Contract Time shall be made by written notice by the CONTRACTOR to the CITY and to ENGINEER within five (5) calendar days of the commencement of the event giving rise to the claim and stating the general nature and cause of the claim. Thereafter within twenty (20) calendar days of the termination of the event giving rise to the claim, written notice of the extent of the claim with supporting information and documentation shall be provided unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim and such notice shall be accompanied by CONTRACTOR's written notarized 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. All claims for changes in the Contract Time shall be determined in accordance with Articles 10.3 and 10.4 hereof, if CITY and CONTRACTOR cannot otherwise agree. **IT IS EXPRESSLY AND SPECIFICALLY AGREED THAT ANY AND ALL CLAIMS FOR CHANGES TO THE CONTRACT TIME SHALL BE WAIVED IF NOT SUBMITTED IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THIS SECTION.**
- B. The Contract Time will be extended an amount equal to time lost on critical Work items due to delays beyond the control of and through no fault or negligence of CONTRACTOR if a claim is made thereafter as provided in Article 11.2. Such delays shall include, but not be limited to, acts or neglect by any separate contractor employed by CITY, fire, floods, labor disputes, epidemics, abnormal weather conditions or acts of God

### 11.3 Basis for Extension:

Extensions of time shall be considered and will be based solely upon the effect of delays to the work as a whole. Extensions of time shall not be granted for delays to the work, unless the CONTRACTOR can clearly demonstrate, through schedule analysis, that the delay to the work as a whole arose in accordance with Article 12.3 or Article 15.1, and that such delays did or will, in fact, delay the progress of work as a whole. Time extensions shall not be allowed for delays to parts of the work that are not on the critical path of the project schedule. Time extensions shall not be granted until all float or contingency time, at the time of the delay, available to absorb specific delays and associated impacts is used.

11.4 Change of Time Due to Contract Execution Problems:

Refer to Article 3.4 for a decrease in Contract Time when the CONTRACTOR fails to return the correctly executed Contract Documents within the time allowed.

11.5 Change of Time Due to Change Order Evaluation:

When evaluating a proposed Change Order, the ENGINEER shall have access to any available float or contingency time. Extension will only be considered in accordance with Article 11.3.

11.6 Change of Time and Inspection and Testing:

Neither observations by the ENGINEER, nor inspections, tests or approvals by others, passing or failing, will be cause for consideration of time extension.

11.7 Change of Time and Defective Work:

- A. If WORK is found to be defective, CONTRACTOR shall bear all remedial expenses including any additional costs experienced by CITY due to delays to others performing additional WORK. CONTRACTOR shall further bear the responsibility for maintaining schedule, and will be excluded from a time extension and the recovery of delay damages due to the uncovering.
- B. If the WORK is found to be defective per the Specifications, but the CITY chooses to accept it at its sole discretion, CONTRACTOR shall bear the responsibility for maintaining schedule, and will be excluded from a time extension and the recovery of delay damages due to the uncovering.

11.8 Liquidated Damages:

All time limits stated in the Contract Documents are of the essence. The provisions of this Article 11 shall not exclude recovery for damages by CITY as indicated in Section 3 of the Supplementary General Conditions.



ARTICLE 12 - WARRANTY AND GUARANTEE;  
TEST AND INSPECTIONS;  
CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

12.1 Warranty and Guarantee:

The CONTRACTOR warrants and guarantees to the CITY and the ENGINEER that all work will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to the CONTRACTOR. All defective work, whether or not in place, may be rejected, corrected or accepted as provided in this Article.

12.2 Tests and Inspections:

- A. The CONTRACTOR shall give the ENGINEER and, when appropriate, the Building Department and other regulatory authorities which have jurisdiction over the work, timely notice of readiness of the work for all required inspections, tests or approvals.
- B. All inspections performed as a result of the issuance of the Master Building Permit shall be performed by the CITY. All costs associated with such inspections shall be paid by the CITY, EXCEPT THAT should said test or inspection fail to pass the CONTRACTOR shall pay all costs associated with the rework and the retesting.
- C. When any other regulatory authority, by virtue of its rules or regulations, requires specific tests or inspections, the CONTRACTOR shall assume full responsibility for and pay all costs in connection with said tests and inspections.
- D. The CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with the ENGINEER's acceptance of a manufacturer, fabricator, supplier or distributor of materials or equipment proposed to be incorporated in the work, or of materials or equipment submitted for approval prior to ENGINEER's acceptance thereof for incorporation in the work and as otherwise specified in the Contract Documents.
- E. Neither observations by the ENGINEER nor inspections, tests or approvals by others shall relieve the CONTRACTOR from his obligations to perform the work in accordance with the Contract Documents.

12.3 Uncovering Work:

- A. If any work that is to be inspected, tested or approved is covered without written concurrence of the ENGINEER, it must, if requested, by the ENGINEER, be uncovered. Such uncovering and replacement shall be at the CONTRACTOR's expense.

- B. CONTRACTOR must contact all regulatory agencies issuing construction permits to make all necessary inspections. If CONTRACTOR fails to have the necessary inspections performed and such failure results in uncovering of work already performed, CONTRACTOR shall be responsible for all related time delays and monetary costs.
- C. If the ENGINEER considers it necessary or advisable that work previously covered with his permission or cognizance be observed, inspected or tested, the CONTRACTOR, at the ENGINEER's request, shall uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the work in question, furnishing all necessary labor, material and equipment. If it is found that such work is defective, the CONTRACTOR shall bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services. If, however, such work is not found to be defective the CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction if he makes a claim therefor in accordance with Article 10.2 and Article 11.2.

#### 12.4 City May Stop the Work:

If the work is defective, or the CONTRACTOR fails to supply sufficient skilled workmen or suitable materials or equipment, the CITY may order the CONTRACTOR to stop the work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the CITY to stop the work shall not give rise to any duty on the part of the CITY to exercise this right for the benefit of the CONTRACTOR or any other party.

#### 12.5 Correction or Removal of Defective Work:

If required by the ENGINEER, the CONTRACTOR shall promptly, without cost to the CITY and as specified by the ENGINEER either correct any defective work, whether or not fabricated, installed or completed, or if the work has been rejected by the ENGINEER, remove it from the site and replace it with nondefective work.

#### 12.6 One Year Correction Period:

If within one year after the date of Substantial Completion or Final Completion as applicable, 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, the CONTRACTOR shall promptly without cost to the CITY and in accordance with the ENGINEER's written instructions, either correct such defective work, or if it has been rejected by the ENGINEER remove it from the site and replace it with nondefective work. If the CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, the ENGINEER may have the defective work corrected or the rejected work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, shall be paid by the CONTRACTOR.

#### 12.7 Acceptance of Defective Work:

If instead of requiring correction or removal and replacement of defective work, the ENGINEER prefers to accept it, he may do so. In such case, if acceptance occurs prior to the ENGINEER's recommendation of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Price; or if the acceptance occurs after such recommendation, an appropriate amount shall be paid by the CONTRACTOR to the CITY.

#### 12.8 City May Correct Defective Work:

If the CONTRACTOR fails within a reasonable time after written notice of the ENGINEER to proceed to correct and to correct defective work or to remove and replace rejected work as required by the ENGINEER in accordance with Paragraph 12.5, or if the CONTRACTOR fails to perform the work in accordance with the Contract Documents, (including any requirements of the progress schedule), the CITY may, after seven days' written notice to the CONTRACTOR, correct and remedy any such deficiency. In exercising its rights under this Paragraph the CITY shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, the CITY may exclude the CONTRACTOR from all or part of the site, take possession of all or part of the work, and suspend the CONTRACTOR's services related thereto, take possession of the 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 the CITY has paid the CONTRACTOR but which are stored elsewhere. The CONTRACTOR shall allow the CITY, the CITY's representatives, agents and employees such access to the site as may be necessary to enable the CITY to exercise his rights under this Paragraph. All direct and indirect costs of the CITY in exercising such rights shall be charged against the CONTRACTOR in an amount verified by the ENGINEER, and a Change Order shall be issued incorporating the necessary revisions in the Contract Documents and a reduction in the Contract Price. Such direct and indirect costs shall include, in particular but without limitations, compensation for additional professional services required and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of the CONTRACTOR's defective work. The CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the work attributable to the exercise by the CITY of the CITY's rights hereunder.

## ARTICLE 13 - PAYMENTS TO THE CONTRACTOR

### 13.1 Basis of Payment:

Progress payments shall be based on the aggregate of the unit price amounts listed in the Proposal or in the Schedule of Values which have been incorporated in the work acceptable to the ENGINEER.

### 13.2 Unit Price Inclusion:

The unit prices stated in the Proposal include all costs and expenses for materials, labor, tools, equipment, transportation, commissions, patent fees and royalties, removing crossings or other obstructions, protection or maintaining pipes, drains, railroad tracks, buildings, bridges, or other structures furnishing temporary crossings or bridges, furnishing all supplemental construction stakes, batter boards, templates, common and ordinary labor for handling materials during inspection replacing any property damage, together with any and all costs or expenses for performing and completing the work as specified.

### 13.3 Schedule of Values: (Lump Sum Price Breakdown)

A Schedule of Values must be submitted within seven days subsequent to the CONTRACTOR executing and submitting the Documents required of Article 2.13 of the Section II – Special Terms and Conditions. The schedules shall be satisfactory in form and substance to the ENGINEER, and shall include quantity and unit prices aggregating the Contract Price, and shall subdivide the work into component parts in sufficient detail to serve as the basis for progress payments during construction. Upon acceptance of the schedule of values by the ENGINEER, it shall be incorporated into a form of Application for Payment acceptable to the ENGINEER.

### 13.4 Changed Conditions: (Unit Price Only)

It is mutually agreed that due to latent field conditions which can not be foreseen at the time of advertising for bids, adjustments of the Plans to field conditions will be necessary during construction; and, therefore, such changes in the plans shall be recognized as constituting a normal and accepted margin of adjustment not unusual and not involving or permitting any change or modification of unit prices, in which case payment will be made for the revised quantities at the unit price bid in the Proposal.

### 13.5 Application for Progress Payment:

On the 20th day of the month or the first working day thereafter, the CONTRACTOR shall submit to the ENGINEER for review an Application for Payment form filled out and signed by the CONTRACTOR. The form shall be notarized, and shall cover the work completed as of the date of the application. The Application for Payment shall be accompanied by a Schedule of Values, and any other supporting documentation as the ENGINEER may reasonably require.

13.6 Payment for Materials:

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 such data, satisfactory to the ENGINEER, as will establish the CITY's title to the material and equipment and protect the CITY's interest therein, including applicable insurance.

13.7 Affidavit Required:

All Applications for Payment shall include an Affidavit of the CONTRACTOR stating that all previous progress payments received on account of the work have been applied to discharge in full all of CONTRACTOR's obligations reflected in prior Applications for Payment. The amount of retainage with respect to progress payments will be 5%.

13.8 Retainage:

The amount of retainage with respect to progress payments will be 5% until completion of the construction services purchased pursuant to the Contract, as more specifically set forth in the Article 3 of the main contract entitled "Partial and Final Payment".

13.9 CONTRACTOR's Warranty of Title:

The 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 the CITY at the time of payment free and clear of all liens, claims, security interests and encumbrances (hereinafter in these General Conditions referred to as "Liens").

13.10 Review of Application for Payment:

The ENGINEER will, within seven (7) days, review the Application for Payment and either approve and submit it for payment or notify the CONTRACTOR of the deficiencies such that the CONTRACTOR may make the necessary corrections and resubmit in time for the month's payment. However, the ENGINEER may refuse to recommend the whole or any part of any payment if, in his opinion, it would be incorrect to make such representations. He may also refuse to recommend any such payment, or because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended to such extent as may be necessary in the ENGINEER's opinion to protect the CITY from loss because:

- A. The work is defective, or completed work has been damaged requiring correction or replacement.
- B. Written claims have been made against the CITY or Liens have been filed in connection with the work.
- C. The Contract Price has been reduced because of Change Order.
- D. The CITY has been required to correct defective work or complete the work in accordance with Article 12.8.
- E. The CONTRACTOR's unsatisfactory prosecution of the work in accordance with the Contract Documents.
- F. The CONTRACTOR's failure to make payment to Sub- Contractors, or for labor, materials or equipment.

13.11 Payment to the Contractor:

Payments are made only on the fifteenth day or first workday thereafter of each month.

ARTICLE 14 - SUBSTANTIAL COMPLETION, PARTIAL UTILIZATION,  
FINAL CLEAN UP, INSPECTION, PAYMENT AND ACCEPTANCE

14.1 Substantial Completion:

When the CONTRACTOR considers the entire work ready for its intended use, the CONTRACTOR shall, in writing to the ENGINEER, certify that the entire work is substantially complete and request that the ENGINEER issue a Certificate of Substantial Completion. Within a reasonable time thereafter the CONTRACTOR and the ENGINEER shall make an inspection of the work to determine the status of completion. If the ENGINEER does not consider the work substantially complete, the ENGINEER will notify the CONTRACTOR in writing giving his reasons therefor. If the ENGINEER considers the work substantially complete, the ENGINEER will prepare and deliver to the CONTRACTOR a Certificate of Substantial Completion, which shall fix the date of Substantial Completion. There shall be attached to the certificate a proposed Punch List, developed by the CONTRACTOR, of items to be completed or corrected before final payment.

Within ten (10) days after delivery of the certificate, the CITY shall review the proposed Punch List and either approve it or contact the CONTRACTOR to commence good faith efforts to develop a Punch List that is satisfactory to both parties. If the parties are unable to resolve any differences they may have in the development of the Punch List, the ENGINEER shall resolve their differences. The parties shall expedite the process of developing the Punch List with the intent of finalizing the Punch List within sixty (60) days after the date of Substantial Completion.

At the time of delivery of the Certificate of Substantial Completion the ENGINEER will deliver to the CONTRACTOR written notice as to division of responsibilities pending final payment between the CITY and the CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities and insurance, said responsibilities will be binding on the CITY and the CONTRACTOR until final payment. Unless otherwise stated herein or on the Certificate of Substantial Completion, all building, product, equipment, and machinery warranties will commence on the date of Substantial Completion. The CITY shall have the right to exclude the CONTRACTOR from the work after the date of Substantial Completion, but the CITY shall allow the CONTRACTOR reasonable access to complete or correct items on the Punch List.

14.2 Partial Utilization:

Use by the CITY of any finished part of the work which has specifically been identified in the Contract Documents or which the ENGINEER and the CONTRACTOR agree constitutes a separately functioning and usable part of the work that can be used by the CITY without significant interference with CONTRACTOR's performance of the remainder of the work, may be accomplished prior to Substantial Completion of all the work subject to the following:



- A. The ENGINEER at any time may request the CONTRACTOR in writing to permit the CITY to use any such part of the work which the ENGINEER believes to be ready for its intended use and substantially complete. If the CONTRACTOR agrees, the CONTRACTOR will certify to the ENGINEER that said part of the work is substantially complete and request the ENGINEER to issue a Certificate of Substantial Completion for that part of the work. The CONTRACTOR, at any time, may notify the ENGINEER in writing that the CONTRACTOR considers any such part of the work ready for its intended use and substantially complete and request the ENGINEER to issue a Certificate of Substantial Complete for the part of the work. Within a reasonable time after either such request, the CONTRACTOR and the ENGINEER shall make an inspection of that part of the work to determine its status of completion. If the ENGINEER does not consider that part of the work to be substantially complete, the ENGINEER will notify the CONTRACTOR in writing giving the reasons therefore. If the ENGINEER considers that part of the work to be substantially complete, the provisions of Article 14.1 will apply with respect to Certificate of Substantial Completion of that part of the work and the division of responsibility in respect thereof and access thereto. It shall be understood by the CONTRACTOR that until such written notification is issued, all responsibility for care and maintenance of all of the WORK shall be borne by the CONTRACTOR. Upon issuance of said written notice of partial utilization, the OWNER will accept responsibility for the protection and maintenance of all such items or portions of the WORK described in the written notice.

#### 14.3 Final Clean-Up:

Upon completion of the work and before final inspection shall be made, the CONTRACTOR shall clean and remove from the site, the Right-of-Way and adjacent property, all surplus and discarded materials, rubbish, and temporary structures; restore in an acceptable manner all property, both public and private, which has been damaged during the prosecution of the work; and shall leave the site and vicinity unobstructed in a neat and presentable condition throughout the entire area or length of the work under Contract. The placing of materials of every character, rubbish, or equipment on the abutting property, with or without the consent of the property owners, shall not constitute the satisfactory disposal. If the work is of such a character as may be done by block or sections, the CONTRACTOR may be required to promptly remove and dispose of accumulated rubbish, debris or surplus materials from blocks or sections as completed or partially completed. No separate payment will be made for final cleaning up and restoration of property, but all costs thereof shall be included in the prices bid for the various scheduled items of work.

#### 14.4 Final Inspection:

Upon written notice from the CONTRACTOR that the entire work or an agreed portion thereof is complete and final clean-up has been completed, the ENGINEER will make a final inspection with the CONTRACTOR and will notify the CONTRACTOR in writing of all particulars in which this inspection reveals that the work is incomplete or defective. The CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.



#### 14.5 Final Application for Payment:

After the CONTRACTOR has completed all such corrections to the satisfaction of the ENGINEER and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in Article 7.19 of the General Conditions and other documents; all as required by the Contract Documents and after the ENGINEER has indicated that the work is acceptable (subject to the provisions of Article 14.9) the CONTRACTOR may make Application for Final Payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to the CITY) of all Liens arising out of or filed in connection with the work. In lieu thereof and as approved by the CITY, the CONTRACTOR may furnish receipts or releases in full; an affidavit of the CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the work for which the CITY or the CITY's property might in any way be responsible, have been paid or otherwise satisfied; and consent of the Surety, if any, to final payment. If any Subcontractor or Supplier fails to furnish a release or receipt in full, the CONTRACTOR may furnish a Bond or other collateral satisfactory to the CITY to indemnify the CITY against any Lien.

#### 14.6 Final Payment and Acceptance:

If on the basis of the ENGINEER's observation of the work during construction and final inspection, and the ENGINEER's review of the final Application for Payment and accompanying documentation, all as required by the Contract Documents, the ENGINEER is satisfied that the work has been completed and the CONTRACTOR's other obligations under the Contract Documents have been fulfilled, the ENGINEER will recommend payment. Thereupon the ENGINEER will give written notice to the CITY and the CONTRACTOR that the work is acceptable subject to the provisions of Article 14.9.

#### 14.7 Payment of Retainage Without Final Completion:

If through no fault of the CONTRACTOR, final completion of the work is significantly delayed and if the ENGINEER so confirms, the CITY shall, upon receipt of the CONTRACTOR's final Application for Payment and recommendation of the ENGINEER, and without terminating the Agreement, make payment of the balance due for the portion of the work fully completed and accepted. If the remaining balance to be held by the CITY 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 Article 5.2, 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 the CONTRACTOR to the 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.

14.8    CONTRACTOR's Continuing Obligation:

The CONTRACTOR's obligation to perform and complete the work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by the ENGINEER, nor the issuance of a Certificate of Substantial Completion, nor any payment by the CITY to the CONTRACTOR under the Contract Documents, nor any use or occupancy of the work or any part thereof by the CITY nor any act of acceptance by the CITY nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor the issuance of a notice of acceptability by the ENGINEER pursuant to Article 14.6, nor any correction of defective work by the CITY will constitute an acceptance of work not in accordance with the Contract Documents or a release of the CONTRACTOR's obligation to perform the work in accordance with the Contract Documents (except as provided in Article 14.9).

14.9    Waiver of Claims:

The making and acceptance of final payment will constitute:

- A.     A waiver of all claims by the CITY against the CONTRACTOR, except claims arising from unsettled Liens, from defective work appearing after final inspection pursuant to Article 14.4 or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by the CITY of any rights in respect of the CONTRACTOR's continuing obligations under the Contract Documents.
- B.     A waiver of all claims by the CONTRACTOR against the CITY other than those previously made in writing and still unsettled.

## ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

### 15.1 City May Suspend Work:

The CITY may, at any time and without cause, suspend the work or any portion thereof for a period of not more than ninety (90) days by notice in writing to the CONTRACTOR which will fix the date on which work will be resumed. The CONTRACTOR shall resume the work on the date so fixed. The CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension.

### 15.2 City May Terminate:

- A. Upon the occurrence of any one or more of the following events:
1. If the CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if the CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency.
  2. If a petition is filed against the CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against the CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency.
  3. If the CONTRACTOR makes a general assignment for the benefit of creditors.
  4. If a trustee, receiver, custodian or agent of the CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of the CONTRACTOR is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of the CONTRACTOR's creditors.
  5. If the CONTRACTOR admits in writing an inability to pay its debts generally as they become due.
  6. If the CONTRACTOR persistently fails to perform the work in accordance with the Contract Documents (including, but not limited to, failure to supply a qualified superintendent or sufficient skilled workers or suitable materials or equipment or failure to adhere to the approved progress schedule revised from time to time).
  7. If the CONTRACTOR disregards laws or regulations of any public body having jurisdiction.

8. If the CONTRACTOR disregards the authority of the ENGINEER.
  9. If the CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents.
- B. The CITY may, after giving the CONTRACTOR and the Surety seven days' written notice and to the extent permitted by laws and regulations, terminate the services of the CONTRACTOR, exclude the CONTRACTOR from the site and take possession of the work and of all the CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by the CONTRACTOR (without liability to the CONTRACTOR for trespass or conversion), incorporate in the work all materials and equipment stored at the site or for which the CITY has paid the CONTRACTOR but which are stored elsewhere, and finish the work as the CITY may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals, and court and arbitration costs) such excess will be paid to the CONTRACTOR. If such costs exceed such unpaid balance, the CONTRACTOR, or CONTRACTOR's Surety, shall pay the difference to the CITY.
  - C. Where the CONTRACTOR's services have been so terminated by the CITY, the CITY alone shall determine the scope and description of the work to be completed and the method and schedule for completing it.
  - D. Where the CONTRACTOR's services have been so terminated by the CITY the termination will not affect any rights or remedies of the CITY against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due the CONTRACTOR by the CITY will not release the CONTRACTOR from liability.
  - E. Upon seven days' written notice to the CONTRACTOR the CITY may, without cause and without prejudice to any other right or remedy, elect to abandon the work and terminate the Contract. In such case the CONTRACTOR shall be paid for all work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs).

### 15.3 Contractor May Stop Work or Terminate:

If through no act or fault of the CONTRACTOR, the work is suspended for a period of more than ninety (90) days by the CITY or under an order of court or other public authority, or the CITY fails for sixty (60) days to pay the CONTRACTOR any sum finally determined to be due, then the CONTRACTOR may, upon seven days' written notice to the CITY terminate the Contract and recover from the CITY payment for all work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Contract, if the CITY has failed to make any payment as aforesaid, the CONTRACTOR may upon seven days' written notice to the CITY stop the work until payment of all amounts then due are paid. The provisions of this paragraph shall not relieve the CONTRACTOR of the obligations to carry on the work in accordance with the progress schedule and without delay during disputes and disagreements with the CITY.

- END OF SECTION -

ATTACHMENT C  
SUPPLEMENTARY GENERAL CONDITIONS  
INDEX TO ARTICLES

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**General Note:**

The General Conditions refer to specific section numbers in the Supplementary General Conditions. These reference numbers may not coordinate with the actual Article numbers utilized in the Supplementary General Conditions. The CONTRACTOR shall comply with all General Conditions and all Supplementary General Conditions as well as related conditions included in the General Requirements, Division 1 of the Technical Specifications. Incorrect cross-reference numbers shall not relieve this requirement.

**1. Project Schedule**

Time is of the essence for this work. The following defines the schedule for the project:

**CONSTRUCTION WORK SCHEDULE  
CONSTRUCTION / STARTUP / ACCEPTANCE:**

Major Milestones	Completion Time (Calendar Days)	Liquidated Damages (Per Day)
Substantial Completion	<b>60</b>	<b>\$1,000.00</b>
Project Closeout	<b>90</b>	<b>\$1,000.00</b>

Failure to meet any of the above defined construction/startup/acceptance completion dates shall subject the CONTRACTOR to pay damages as specified in these Supplementary General Conditions in Article 3.

**<sup>(1)</sup>Substantial Completion**

1. Refer to Attachment B - General Conditions Articles 14.1 and 14.2. (Certification of Substantial Completion Services appended to the Supplementary General Conditions).
2. Substantial Completion shall also include:
  - Completion of all construction work associated with the specific "Major Milestone" listed in the construction work schedule including completion of punch list items. "Completion of punch list items" shall be as determined by the Engineer in the field.
  - Coating touchup completed.
  - Record shop drawings and O&M submittals received and accepted by the Engineer.
  - Record drawing red-lines received and accepted by the Engineer.
  - Guarantee certifications, performance affidavits, and all other certifications received and accepted by the Engineer.

Contractor shall also conform to construction sequence constraints as defined on the Drawings and in Specifications.

<sup>(2)</sup>Project Closeout

1. Refer to Division 1 General Requirement, Section 01700 Project Closeout.
2. Project Closeout shall also include:
  - All requirements of substantial completion met plus the following
  - Site cleanup and restoration completed
  - All other sitework completed
  - Minor punch list items completed (minor as defined by the Engineer in the field)
  - Demobilization completed
  - Releases from all parties who are entitled to claims

The title "Engineer" utilized in these descriptions for substantial and final completion shall mean the City staff engineer assigned to this project, or his designated representative.

2. **Insurance Requirements (Not Used. Refer to ARTICLE 2.25 of SECTION II – SPECIAL TERMS AND CONDITIONS OF THE CONTRACT DOCUMENTS**



### 3. **Liquidated Damages**

Liquidated damages shall be paid by the CONTRACTOR to the CITY for failure to complete work on time in accordance with the following schedule:

CONSTRUCTION/STARTUP/ACCEPTANCE:		
<u>Major Milestones</u>	<u>Completion Time (calendar days)</u>	<u>Liquidated Damages (Per Day)</u>
1. Substantial Completion	<b>60</b>	<b>\$1,000.00</b>
2. Project Closeout	<b>90</b>	<b>\$1,000.00</b>

The CITY is hereby authorized to deduct the sums described above from the monies which may be due to the CONTRACTOR for the work under this contract. Liquidated damages shall be additive such that the maximum total which may be deducted shall be \$1,000.00/day. Other damages for failure to meet warranty conditions as defined in other sections of the Specifications shall also be added with liquidated damages for failure to meet completion times.

**4. Restricted Area**

The CONTRACTOR shall, in installing the new facilities, confine all activities within the CITY property, easement, and right-of-ways indicated.

**5. Existing Facilities and Structures**

All existing facilities shall be protected, and if damaged, shall be repaired by the CONTRACTOR at no additional cost to the CITY.

**6. Explosives**

Explosives shall not be used on this project.

**7. Contract Documents**

The CITY will provide the CONTRACTOR with one (1) set of Contract Documents after the Notice to Proceed.

**8. Required Notifications**

When provisions of the pertinent codes, standards or regulations conflict with this Specification, the more stringent shall apply.

Prior to any site work, the CONTRACTOR shall notify the Engineering and Construction Services Division Inspector at (954) 921-3930.

Prior to excavation at the site, the CONTRACTOR shall notify the appropriate utilities and Sunshine State One-Call of Florida, Inc. (formerly U.N.C.L.E.) at 1-800-432-4770 for locations of buried utilities.

Prior to closure of any CITY streets or alleyways, or other activity which requires the diversion of traffic, the CONTRACTOR shall notify and obtain the permission of the CITY of Hollywood Fire and Police Communications Section at (954) 967-4321.

**9. Notice of Completion**

See attached form.

**10. Prevailing Wage Requirement**

A. The CONTRACTOR shall be responsible for ensuring payment of the rate of wages and fringe benefits, or cash equivalent, for all laborers, mechanics and apprentices employed by him/her or his/her SUBCONTRACTORS on the work covered by this contract which shall be not less than the prevailing rate of wages and fringe benefits payment or cash equivalent for similar skills or classifications of work as established by the General Wage Decision by the United States Department of Labor for Broward County, Florida that is in effect prior to the date the CITY issued the invitation for bids for this project (the prevailing rate of wages and fringes can be obtained at website <http://www.access.gpo.gov/davisbacon>).

If the General Wage Decision fails to provide for a fringe benefit rate for any worker classification, then the fringe benefit rate applicable to such worker classification shall be the fringe benefit rate that has a basic wage rate closest in dollar amount to the work classification for which no fringe benefit rate has been provided.

- B. Upon commencement of work, the CONTRACTOR and all of his/her SUB-CONTRACTORS shall post a notice in a prominent place at the work site stating the requirements of this Article.
- C. As per the City of Hollywood Code of Ordinances, Prevailing Wage Requirements and Fringe Benefits are applicable to the following: (A) Utilities projects over \$1,000,000.00 (one million dollars) and (B) All other projects over \$500,000.00 (five hundred thousand dollars).

## **11. Inspections and Testing During Overtime**

- A. The following supplement Article 3.15 and 3.16 of the General Conditions:

For weekend work, CONTRACTOR shall submit a written request to the CITY by the preceding Wednesday. A separate request is required for each week that the CONTRACTOR wished to work on a weekend. For evening and holiday work, CONTRACTOR shall submit a written request to the CITY three (3) days in advance. The CITY will provide inspection services for all overtime work and the CONTRACTOR shall pay for inspection services per Article 3.15, no exceptions.

Similarly, Holiday and other overtime work shall be requested a minimum of 36-hours in advance and CITY will provide inspection for all overtime.

- B. Exceptions to the hours and days of the week for work and other related limitations are allowed only for tie-ins during low flow periods / early morning hours, coatings that need to be applied during lower temperature times of the day and whenever the Documents specifically define that work shall be completed outside of the limitations for "normal" work hours, days, etc.

Inspection for tie-ins during low flow/early morning and specialty coating application performed during nighttime will not be cause for extra inspection costs unless such work is remedial in nature as a result of defective work.

## **12. Retainage**

After Substantial Completion of the construction services purchased pursuant to this contract, CONTRACTOR may present to CITY a payment request for one-half of the retainage then held by CITY. CITY shall promptly make payment to CONTRACTOR, unless CITY has grounds for withholding the payment of retainage. CITY shall have grounds for withholding the payment of retainage with respect to any amounts that are the subject of a good-faith dispute, the subject of a claim brought pursuant to Florida Statute Section 255.05, or otherwise the subject of a claim or demand by CITY or CONTRACTOR.

At acceptance of Substantial Completion, CITY shall promptly make payment to CONTRACTOR of one-half of the retainage then held by CITY. At acceptance of

completion of all punch list items, CITY shall promptly make payment to CONTRACTOR the balance of retainage then held by CITY.

**13. Owner's Contingency (NOT USED)**

*This allowance is in its entirety dedicated for the use of the Owner (The City of Hollywood) to address conditions (or work) associated with undefined conditions. All work resulting from undefined conditions shall be authorized in writing and in advance by the Owner, specifically the Director of Public Services, through the full execution of a Field Order. The actual amount to be paid per Field Order will be negotiated and agreed by both parties (the Owner and the Contractor). The final/negotiated amount of the field order will be deducted from the Owner's Allowance designated in the Bid Proposal and Schedule of Values. The Owner reserves the right to award none, any portion of, or all of the money associated with this allowance. By executing the CONTRACT between the City of Hollywood and the Contractor, the Contractor acknowledges that under no circumstances he or she should assume that he or she would be entitled to any amounts set aside by the City of Hollywood within the Owner's Allowance.*

# CERTIFICATE OF SUBSTANTIAL COMPLETION

**PROJECT:**

**ENGINEER:** Engineering & Const. Services Division

**TO:**

**CONTRACTOR:**

**CONTRACT FOR:**

**NOTICE TO PROCEED DATE:**

**DATE OF ISSUANCE:**

**PROJECT OR DESIGNATED PORTION SHALL INCLUDE:**

Portions of the work performed under this Contract as described above, have been reviewed and found to be substantially complete. The Date of Substantial Completion of Project or designated portion thereof designated above is hereby established as \_\_\_\_\_ which is also the date of commencement of applicable warranties required by the Contract Documents for the noted area.

## **DEFINITION OF DATE OF SUBSTANTIAL COMPLETION**

The Date of Substantial Completion of the work or designated portion thereof is the date certified by the ENGINEER ("Date of Issuance" above) when construction is sufficiently complete, in accordance with the Contract Documents, so the CITY can occupy or utilize the work or designated portion thereof for the use for which it is intended, as expressed in the Contract Documents.

A list of items to be completed or corrected, prepared by the CONTRACTOR and verified and amended by the ENGINEER, for the above referenced "Project or Designated Portion" is attached to this form (attached "Punch List" dated \_\_\_\_\_).

The failure to include any items on such list does not alter the responsibility of the CONTRACTOR to complete all work in accordance with the Contract Documents.

## CERTIFICATE OF SUBSTANTIAL COMPLETION

Please note that in accordance with Article 14 General Conditions, the Contractor retains full responsibility for the satisfactory completion of all work regardless of whether the Owner occupies and / or operates a part of the facility and that the taking possession and use of such work shall not be deemed an acceptance of any work not completed in accordance with the Contract Documents.

City of Hollywood - ECSD

**ENGINEER**

**BY**

**DATE**

**CONTRACTOR**

**BY**

**DATE**

The CITY OF HOLLYWOOD, through the City's authorized representative, accepts the work or designated portion thereof as substantially complete and will assume full possession thereof at \_\_\_\_\_(time) on \_\_\_\_\_  
\_\_\_\_\_ (date).

**BY**

**DATE**

- END OF SECTION -

# STIRLING ROAD 8-INCH WATER MAIN EXTENSION

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# STIRLING ROAD 8-INCH WATER MAIN EXTENSION

## TABLE OF CONTENT

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### Title

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# **DIVISION 1**

# **GENERAL** **REQUIREMENTS**

## SECTION 01010

### SUMMARY OF WORK

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENT

- A. The work to be performed under this Contract shall consist of furnishing all tools, equipment, materials, supplies, and manufactured articles and for furnishing all transportation and services, including fuel, power, water, and essential communications, and for the performance of all labor, work, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The work shall be complete, and all work, materials, and services not expressly shown or called for in the Contract documents which may be necessary for the complete and proper construction of the work in good faith shall be performed, furnished, and installed by the Contractor as though originally so specified or shown, at no increase in cost to the City.
- B. Prior to construction, the Contractor shall verify existing utilities identified on the Drawings and locate other potential utilities in their working area that may not be shown on the Drawings. The utility verifications consist of excavation to verify tie-in points and to locate potential conflicts that may affect the work as shown on the Drawings. The Contractor shall be responsible for the coordination of this work with the associated utility owners and permitting agencies having jurisdiction over the specific locations to be verified.

##### 1.02 SCOPE

- A. It is the intent of the City to obtain a complete and working installation under this contract and any items of labor, materials, or equipment, which may reasonably be assumed as necessary to accomplish this end, should be supplied whether or not specifically shown on the plans or described herein. Maintenance of the existing utility systems is mandated throughout the construction period.
- B. **In general, the project consists of a water main extension along SR-848 (Stirling Road) from N 56<sup>th</sup> Avenue to N. 54<sup>th</sup> Avenue. The water main improvements consist of approximately 800 linear feet of proposed 8-inch diameter water main along a State Road.**
- C. Phasing: The Contractor is required to submit a phasing plan for the Owner's review and approval prior to commencement of construction. All phases are required to be completed within **Contract specified calendar days** restoration efforts. For each phase that does not meet this requirement, liquidated damages will be assessed in the amount of **Contract specified amount per day**. The Contractor is responsible for all MOT efforts required to sequence this phase, and all additional phases of the work. Contractor coordination efforts may include, but not be limited to; phasing of the work, work zone coordination, adjusting work limits or work phasing pending the timing of work being

completed by others, MOT coordination, MOT phasing, permit submittals and approval timing, restoration coordination, coordination with the Owner, the Engineer and other jurisdictional agencies, coordination with sub-contractors and other workers, public involvement coordination, coordination for notifications, and all other necessary coordination efforts to properly sync the project construction. Additional costs, claims, or change orders to the Owner will not be acceptable due to lack of coordination and proper phasing of the Work on the part of the Contractor.

#### 1.03 WORK BY OTHERS

- A. The Contractor shall cooperate fully with all utility forces of the City, or other public or private agencies engaged in the relocation, altering, or otherwise rearranging any facilities which interfere with the progress of the work, and shall schedule the work so as to minimize interference with said relocation, altering, or rearranging of facilities.
- B. The Contractor's attention is directed to the fact that work may be conducted at the site by other contractors during the performance of the work under this Contract. The Contractor shall conduct its operations so as to cause a minimum of interference with the Work of such other contractors and shall cooperate fully with such contractors to provide continued safe access to their respective portions of the site, as required to perform their respective contracts.
- C. When two or more contracts are being executed at one time on the same or adjacent land in such manner that Work on one contract may interfere with that on another, the City shall determine the sequence and order of the Work. When the territory of one contract is the necessary or convenient means of access for the execution of another contractor, such privilege of access or any other reasonable privilege may be granted by the City to Contractor.

#### 1.04 CONTRACTOR FURNISHED MATERIAL AND EQUIPMENT

- A. All equipment, materials, or devices incorporated in this project shall be new and unused, unless indicated otherwise in the Contract Documents and shall be the products of reliable manufacturers who, unless otherwise specified, have been regularly engaged in the manufacture of such material and equipment for at least five (5) years. Procedures and additional requirements regarding manufacturer's experience and substitutions are included in Section 01300 - Submittals.

#### 1.05 DRAWINGS OF EXISTING FACILITIES

- A. Drawings of the existing facilities may be inspected at the City's Engineering and Construction Services Office. These drawings are for information only and are not a part of the Contract Documents. In making these drawings available for inspection, the City makes no guarantee, either expressed or implied, as to their accuracy or completeness.
- B. The Contractor shall contact representatives for other utilities, facilities in proximity of the work and Sunshine State One Call Inc., to obtain the as-built information from them directly. The utilities shown on Drawings are based upon available records supplied from various sources. The City makes no guarantee, either expressed or implied, as to their accuracy or completeness.

#### 1.06 ITEMS SPECIFIED ON DRAWINGS

- A. Certain items of material and/or equipment, and their installation may be specified on the Drawings and not mentioned in the Specifications. Such items are to be considered as both shown on the Drawings and noted in the Specifications and be provided by the Contractor in accordance with the Specification on the Drawings.

#### 1.07 FIELD LAYOUT OF WORK

- A. See Section 01050 – Field Engineering.
- B. All survey work for construction control purposes shall be made by the Contractor at his expense.

#### PART 2 - PRODUCTS (NOT USED)

#### PART 3 – EXECUTION (NOT USED)

END OF SECTION

## SECTION 01025

### BASIS OF PAYMENT

#### PART 1 – GENERAL

##### 1.01 GENERAL

- A. Payments to the Contractor shall be made based on the bid items listed on the Proposal Bid Form as full and complete payment for furnishing all materials, labor, tools and equipment, and for performing all operations necessary to complete the work included in the Contract Documents. Such compensation shall also include payments for any loss or damages arising directly or indirectly from the work, or from any discrepancies between the actual quantities of work and those shown in the Contract Documents, or from any unforeseen difficulties which may be encountered during the prosecution of the work until the final acceptance by the City.
- B. The prices stated in the proposal include full compensation for overhead and profit, all costs and expenses for taxes, labor, equipment, materials, commissions, transportation charges and expenses, patent fees and royalties, labor for handling materials during inspection, furnishing and repairing small tools and ordinary equipment, mobilization, home office expenses and general supervision, bond, insurance, labor for handling materials during inspection, together with any and all other costs and expenses for performing and completing the work as shown on the plans and specified herein. In addition, the Contractor shall include the actual cost of social security taxes, unemployment insurance, worker's compensation, fringe benefits, inclusive of life and health insurance, union dues, pension, pension plans, vacations, and insurance and contractor's public liability and property damage insurance involved in the work based on the actual wages paid to such labor and all other general costs and profits, prorated to each Item.
- C. Unless otherwise specifically stated elsewhere herein, the Contractor shall include in the prices bid all materials, electrical supply, fuel, lubricants, temporary equipment, temporary wiring, temporary piping and fittings, pumps, gages, and all other items of whatever nature required to completely test, balance, disinfect if required, and put into fully operational condition all equipment and/or systems supplied by either the Department or the Contractor and installed as a part of this Project. Further, any test materials supplied by the Contractor shall be completely satisfactory to the Department. Any decision as to whether a particular material is suitable for test purposes shall be at the sole discretion of the Engineer whose decision shall be final. Any material considered not suitable shall be immediately replaced by the Contractor with suitable material and no extra compensation will be allowed.

- D. The Basis of Payment for an item at the price shown in the Proposal shall be in accordance with its description of the item in this Section and as related to the work specified and as shown on the Drawings. Unit prices when used will be applied to the actual quantities furnished and installed in conformance with the Contract Documents.
- E. The Contractor's attention is called to the fact that the quotations for the various items of work are intended to obtain a complete and working installation under this Contract, and any items of labor, equipment or materials which may reasonably be assumed as necessary to accomplish this end shall be supplied whether shown specifically on the Plans or stated herein. Should the Contractor feel that the cost of any item of work has not been established by the Proposal or Basis of Payment, he shall include the cost for that work in the last Bid Item for each construction package so that his proposal for the project does reflect his total price for completing the work in its entirety.
- F. The Contractor shall submit, with each Payment Request, a list of M/WBE Subcontractors that he is or will be utilizing for his contract. For each M/WBE Subcontractor, the following information shall be provided:
  - 1. Total sub-contract dollar amount.
  - 2. Amount paid to date.

#### 1.02 MEASUREMENT

The quantities for payment under this Contract shall be determined by actual measurement of the completed items, in place, ready for service and accepted by the City, in accordance with the Schedule of Payment Values as described in Section 01300, unless otherwise specified. A representative of the City shall witness all field measurements.

#### 1.03 PAYMENT ITEMS

For purposes of describing items appearing in the Proposal Bid Form, pricing for each item shall include work and components described below:

##### **Water System Pay Items and General Payment:**

- A. **Item No. 1 – Mobilization, Demobilization, Bonds, and Insurance (10% Total Construction Costs)** - The lump sum price for this item shall be full compensation for all mobilization/demobilization activities, including but not limited to bonds, insurance, transport of personnel, materials, equipment, and other incidentals to the site, preparation of submittals including schedule, permit packages, and others, temporary facilities and offices, safety equipment and first aid supplies, project signs including procurement, installation, and removal at the end of the project (City approved signs and locations), field surveys, sanitary and other facilities required by the specifications, audio-video documentation of the existing site, any space required for staging, laydown, survey, storage, parking, etc., and all other activities necessary for complete mobilization/demobilization requirement for the contract. **This pay item shall not exceed 10% of the sum of Bid Item Nos. 3 through 9, excluding any**

**Mobilization/Demobilization, Maintenance of Traffic, Contingency and Allowance Items.** Sixty percent of this total cost is for mobilization, bonds and insurance with forty percent of the total cost for demobilization.

- B. **Item No. 2 – Maintenance of Traffic (MOT) (30% Total Construction Costs)** - Payment for all labor for the design and preparation of signed and sealed (FL Professional Engineer with Advanced MOT Certification) phased and detailed MOT plans, all submittals and permitting through various regulatory agencies having jurisdiction over the ROW limits, lane closure submittals and approvals, traffic studies, flagman, police, all MOT pavement markings and striping, and installation and removal and/or relocations and maintenance of phased traffic control devices for the duration of the project and to final completion per applicable authority having jurisdiction regarding MOT (vehicular, railroad and pedestrian). Costs associated with night and weekend work including but not limited to inspector costs, police of flagmen costs, signage and MOT costs, and all other associated costs are included. **This pay item shall not exceed 10% of the sum of Bid Item Nos. 3 through 9.**
- C. **Item No. 3 & No. 4 – Furnish & Install 8” Water Main** - Payment for all labor, equipment and materials for all work necessary and required for the installation of new water mains as shown in the plans. This work shall include but not be limited to: phasing, clearing and grubbing, removal and disposal of existing asphalt pavements of varying thickness, removal, disposal, and replacement of existing underground geotextile fabric without impacting or damaging portions of geotextile fabric to remain, locating, protection and support of **all existing utilities**, coordination with all utility facility owners for locating and relocations of existing utilities (by facility owners), temporary utility relocations as needed for City facilities, preparation and submittal of shop drawings, preparation of a certified Stormwater Pollution Prevention Plan in accordance with the National Pollution Discharge Elimination System (NPDES) requirements and submittals to the Florida Department of Environmental Protection (FDEP) for review and permit approval as well as preparing, installing, maintaining, and removing the erosion control devices necessary to comply with NPDES requirements, removal and replacement of impacted exfiltration systems and drainfields, tree and shrub protection, trimming, removal and replacement, Replacement of impacted traffic, signalization, and street lighting lines; signage and mailbox protection removal and replacement, fencing and gate protection and removal and replacement, power pole and guy wire support and relocation, removal and replacement (including coordination and applicable fees), irrigation system protection or removal and replacement, piping trench excavation (including all exploratory equipment and excavations), sheeting, shoring, bracing, dewatering, groundwater sampling, treatment and disposal, dewatering permit applications preparation, fees and permitting, line stops and bypass piping for line stops including thrust blocks, pipe (Class 52 domestic ductile iron, C-900 or C-905 PVC), all domestic ductile iron poly wrapped fittings (shown and not shown), 316 stainless steel washers, nuts and bolts, and restraining rods for mechanical joint fittings, stainless steel restraining devices for proposed and existing water mains, connections and reconnections, cut-ins or tie-ins to existing water mains (including any required due to phasing) and all necessary coordination, all temporary water main relocations, polyethylene encasement for all domestic ductile iron pipe, metallic tracer wire, line locator, identification markers, pipe installation, clean fill/backfill material, reinforced concrete slabs and/or excavatable flowable fill to be installed as

directed by EOR, bedding, removal and disposal of unsuitable soils, compaction, removal of and disposal of pavement of varying thicknesses, full trench and surface restoration and cleanup, sodding, grading and re-grading, driveway removal and restoration of various materials including but not limited to; pavers, stamped concrete, brick and specialty materials, curbing and gutter removal and restoration, bacteriological sampling and testing (including all fees, permit and expediting fees), pressure testing, flushing devices including risers or canons and valves, blow off valves and appurtenances, and all necessary accessories required for a complete installation, other restorations and other related work not defined in other Bid Package Items. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation.

- D. **Item No. 5 – Furnish & Install 8” Domestic DIP Tees** - Payment for all labor, equipment, and material for all work necessary and required for the installation of new tees, as shown in the plans. This work shall include but not be limited to; phasing, clearing and grubbing, removal and disposal of existing asphalt pavements of varying thickness, removal, disposal, and replacement of existing underground geotextile fabric without impacting or damaging portions of geotextile fabric to remain, locating, protection and support of **all existing utilities**, coordination with all utility facility owners for locating and relocations of existing utilities (by facility owners), temporary utility relocations as needed for City facilities; including but not limited to all utilities, preparation and submittal of shop drawings, preparation of a certified Stormwater Pollution Prevention Plan in accordance with the National Pollution Discharge Elimination System (NPDES) requirements and submittals to the Florida Department of Environmental Protection (FDEP) for review and permit approval as well as preparing, installing, maintaining, and removing the erosion control devices necessary to comply with NPDES requirements, removal and replacement of impacted exfiltration systems and drainfields, tree and shrub protection, trimming, removal and replacement, signage and mailbox protection, removal and replacement, fencing and gate protection and removal and replacement, Replacement of impacted traffic, signalization, and street lighting lines; power pole and guy wire support and relocation (including coordination and applicable fees), removal and replacement, irrigation system protection or removal and replacement, piping trench excavation (including exploratory excavation), sheeting, shoring, bracing, dewatering, groundwater sampling, treatment and disposal, dewatering permit applications preparation and permitting, restraining devices, domestic ductile iron fittings, 316 stainless steel nuts, washers and bolts, 316 stainless steel restraining rods for mechanical joint fittings, restraining devices for proposed and existing water mains, polyethylene encasement for all domestic ductile iron tees, metallic tracer wire, line locator, identification markers, clean fill/backfill material, concrete slabs and/or excavatable flowable fill, bedding, removal and disposal of unsuitable soils, compaction, removal of and disposal of pavement of varying thicknesses, full trench and surface restoration and cleanup, sodding, grading and regrading, driveway removal and restoration of various materials including but not limited to; pavers, stamped concrete, brick and specialty materials, curbing removal and restoration, bacteriological testing, pressure testing, and all necessary accessories required for a complete installation, other restorations and other related work not defined in other Bid Package Items. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation.



- E. **Item No. 6 – Furnish & Install 8” Gate Valves** - Payment for all labor, equipment and material for all work necessary and required for the installation of new gate valves (excluding tapping valves and fire hydrant isolation valves), as shown in the plans, valve box, valve box extensions, operating nut extensions, test station box and cap, valve wrenches, restraining devices, traffic rated covers, concrete collars. This work shall include but not be limited to; phasing, clearing and grubbing, removal and disposal of existing asphalt pavements of varying thickness, removal, disposal, and replacement of existing underground geotextile fabric without impacting or damaging portions of geotextile fabric to remain, locating, protection and support of **all existing utilities**, coordination with all utility facility owners for locating and relocations of existing utilities (by facility owners), temporary utility relocations as needed for City facilities; including but not limited to all utilities, preparation and submittal of shop drawings, preparation of a certified Stormwater Pollution Prevention Plan in accordance with the National Pollution Discharge Elimination System (NPDES) requirements and submittals to the Florida Department of Environmental Protection (FDEP) for review and permit approval as well as preparing, installing, maintaining, and removing the erosion control devices necessary to comply with NPDES requirements, removal and replacement of impacted exfiltration systems and drainfields, tree and shrub protection, trimming, removal and replacement, signage and mailbox protection, removal and replacement, fencing and gate protection and removal and replacement, Replacement of impacted traffic, signalization, and street lighting lines; power pole and guy wire support and relocation (including coordination and applicable fees), removal and replacement, irrigation system protection or removal and replacement, piping trench excavation (including exploratory excavation), sheeting, shoring, bracing, dewatering, groundwater sampling, treatment and disposal, dewatering permit applications preparation and permitting, valve, valve box, valve box extensions, operating nut extensions, test station box and cap, valve wrenches, restraining devices, traffic rated covers, concrete collars, domestic ductile iron fittings, 316 stainless steel nuts, washers and bolts, 316 stainless steel restraining rods for mechanical joint fittings, restraining devices for proposed and existing water mains, polyethylene encasement for all domestic ductile iron valves, metallic tracer wire, line locator, identification markers, pipe installation, clean fill/backfill material, concrete slabs and/or excavatable flowable fill, bedding, removal and disposal of unsuitable soils, compaction, Removal of and disposal of pavement of varying thicknesses, full trench and surface restoration and cleanup, sodding, grading and regrading, driveway removal and restoration of various materials including but not limited to; pavers, stamped concrete, brick and specialty materials, curbing removal and restoration, bacteriological testing, pressure testing, and all necessary accessories required for a complete installation, other restorations and other related work not defined in other Bid Package Items. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation.
- F. **Item No. 7 – Furnish & Install 8” Line Stops** - Price and payment will be for furnishing all labor, materials, and equipment, for all work to install line stops or line stops with all bypass pumping equipment, materials and operations, verification of pipe outer diameter, wall thickness and material, including removal and disposal of pavement of varying thicknesses, sidewalk removal and replacement, curb removal and replacement, Replacement of impacted traffic, signalization, and street lighting lines, locating,

protection and support of all existing utilities, coordination with all utility facility owners for locating and relocations of existing utilities (by facility owners), temporary utility relocations as needed for City facilities, coordination, excavation (including exploratory excavation), lifting services, concrete pipe anchor or megalug restraint system, concrete support for the line stop, sheeting, shoring and bracing, Dewatering, groundwater sampling, all contamination permitting and compliance, treatment and disposal, dewatering permit applications preparation,, clean fill/backfill material, excavatable flowable fill, compaction, Removal of and disposal of pavement of varying thicknesses, grading, temporary erosion control, layout, disposal of unsuitable or excess material, additional MOT as needed, and restoration of the area. This item also includes all fittings, 316 stainless steel nuts, washers and bolts, 316 stainless steel restraining rods for mechanical joint fittings, restraining of piping as required, thrust blocks, valves, caps, plugs, all bypass piping and pumping equipment including noise attenuation for all pumping equipment, materials and operations, all permitting and associated fees for all agencies having jurisdiction over the project area. All excavated areas shall be restored to existing conditions or better. Payment shall be for each of the line stops. The City reserves the right to award any, all, or none of the money associated with this allowance.

- A. **Item No. 8 – Milling (1 ½”) & Resurfacing (1 ½”) of FDOT Roadway** - Payment for all labor, equipment and material for all work necessary and required for milling 1½” of existing pavement of various thicknesses, as measured along the limits defined in the Pavement Restoration Plans and Details appended hereto for Stirling Road, saw cutting, removal, and disposal of existing pavement of all thicknesses and types, any required field work by the Contractor to confirm existing pavement thicknesses prior to bidding (i.e. pavement cores, etc.), and replacement of 1½” of asphalt pavement to meet all City and Broward County standards and specifications, latest editions. Also included in this item is any adjustments of valve boxes, valve covers, manhole frames and rims, removal and replacement of all surface items to maintain a level driving surface and to match final grades. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete removal and disposal of existing concrete and other materials, as required. Payment for all labor, equipment and material for all work necessary and required for resurfacing of 1½” of existing pavement of various thicknesses, as measured along the limits defined in the Pavement Restoration Plans and Details appended hereto for Stirling Road. Machine laid asphaltic concrete surface course for permanent paving, will be paid for at the unit price bid times the number of square yards (SY) of asphaltic concrete installed and accepted by the Engineer, as measured along the limits defined in the Pavement Restoration Plans and Details appended hereto. Greater widths are at the Contractors option and expense. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable machine-laid asphaltic concrete surface course installation, as required and including all restoration efforts.
- B. **Item No. 9 – Temporary and Permanent Pavement Markings and Signage** - For temporary paint and permanent thermoplastic pavement markings and messages, reflective pavement markers, removed or obliterated by the Contractor's operation, or as indicated on the plans, in accordance with MUTCD, FDOT Standard Specifications for Road and Bridge Construction, and/or Broward County Public Works Department Standards,

latest editions. Markings required for MOT operations shall be billed under the MOT pay item. Any remedial work that requires restoration of temporary pavement markings will be at no additional cost to the City. Payment shall be at the lump sum amount bid for the entire project.

- G. **Item No. 10 – Owner’s Contingency (allowance) (30%)** - Included in this contingency are works associated with undefined conditions or conflicts developing from undefined conditions. All work authorized for payment will be authorized in writing by the City in advance of commencement for this work. Amount to be paid per undefined conditions or conflict shall be negotiated or agreed to by both parties. The City reserves the right to award any, all, or none of the money associated with this allowance.
- H. **Item No. 11 – Density Testing (allowance) (5%)** - The allowance indicated for this item is to pay for all density testing for all piping installations to meet City, FDOT and Broward County standards. Density testing for multiple mobilizations due to limited testing as ordered by the Contractor will not be paid for by this allowance nor will stand-by time be paid for by this allowance. Any lack of Contractor coordination and scheduling which creates additional trips or downtime by the testing company will not be accepted or paid for by this allowance. The Contractor is to schedule and coordinate all testing times to ensure efficiency. The Contractor is responsible for submitting and obtaining all necessary regulatory agency permits other than those provided by the Owner and the Contractor is responsible for paying for all associated permit fees which are specifically excluded from this allowance and to be included in the various bid items herein. Fees specifically excluded from this allowance, include but are not limited to, reinspection fees, expired permit fees stand by time, failed test and bacteriological testing fees. The City reserves the right to award any, all, or none of the money associated with this allowance.
- I. **Item No. 12 – Water System Permits, Licenses and Fees (allowance) (5%)** - The allowance indicated for this item is to pay for all water system permits, licenses and other fees as stated herein which are required of the Contractor to submit for and obtain from various agencies having jurisdiction (FDOT, Broward County, FEC railroad, etc.) for construction of the project. Please refer to the Water Main and Sewer Plan approval from the Broward County Highway Construction Engineering Division. Please take note of the required security amount of \$ [REDACTED] required of the Contractor, which will not be reimbursed by the City. The City will reimburse the [REDACTED] % permit fee. The allowance shown on the Schedule of Bid Prices is an estimate of fees required. Payment will be based on the actual water permits, licenses or fees paid directly to agency, documented by paid receipts, specifically excluding any labor, mark-up, overhead and profit, administration and other costs involved in obtaining water permits or licenses or paying fees. Individual plumbing permit fees for private property water meter relocations are to be included in this allowance. This item also includes all notifications, coordination and permitting submittals and fees, flagmen and all necessary construction or inspection fees. Density testing for piping installations are also to be included in this allowance. Density testing for multiple mobilizations due to limited testing as ordered by the Contractor will not be paid for by this allowance nor will stand-by time be paid for by this allowance. Any lack of Contractor coordination and scheduling which creates additional trips or down-time by the testing company will not be accepted or paid for by this allowance. The Contractor is to schedule and coordinate all testing times to ensure efficiency. The Contractor is

responsible for submitting and obtaining all necessary regulatory agency water permits other than those provided by the Owner and the Contractor is responsible for paying for all associated water permit fees which are specifically excluded from this allowance and to be included in the various bid items herein. Fees specifically excluded from this allowance, include but are not limited to, reinspection fees, expired permit fees stand by time, failed test and bacteriological testing fees. The City reserves the right to award any, all, or none of the money associated with this allowance.

- J. **Item No. 13 – As-Builts and Record Drawings (By Land Surveyor approved by City or EOR) (2%)** - Measurement of various items for the As-Builts and Record Drawings will not be made for payment and all items shall be included in the lump sum price. Payment will be for full compensation to furnish as-built documentation and record drawings signed and sealed by a licensed PSM in hardcopy and electronic form and meeting City standards (PDF and AutoCAD) and an asset table at the completion and acceptance of work. In addition, for furnishing monthly as-builts and redlined drawings with pay applications.
- K. **Item No. 14 – Consideration for Indemnification** - In recognition of the Contractor's indemnification obligations, the City will pay to the Contractor the specific consideration of ten dollars (\$10.00). Payment of said specific consideration shall be made at the time of the payment of the first progress estimate and the Contractor shall acknowledge payment of this consideration by letter to the City after receipt of the progress

If the bidder makes an error in his addition of the total bid prices of the applicable items in the Quotation, the correct sum of its applicable bid item totals shall be the Total Bid.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

## SECTION 01030

### SPECIAL PROJECT PROCEDURES

#### PART 1 - GENERAL

##### 1.01 SEQUENCE OF WORK

- A. The Contractor shall establish his work sequence based on the use of crews to facilitate completion of the construction within the specified contract time. Contractor shall submit a detailed phasing and project construction sequencing schedule and plan as required.
- B. The Contractor will be required to sequence and planned their work efforts around active construction projects within vicinity of project. The following is a known project to be in construction by Others.
  - a. SR 822/ Sheridan Street Bridge Rehabilitation Project

##### 1.02 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. Local jurisdictional requirements may vary from the above requirements. It is the Contractor's responsibility to identify and comply with all jurisdictional requirements for noise abatement, construction work hours and notifications.
- C. **§ 100.05 ADDITIONAL LIMITATION FOR CONSTRUCTION ACTIVITY. The construction, alteration, repair, excavation, or demolition of any building or structure is to be conducted no earlier than 7:00 a.m. and no later than 6:00 p.m., Monday through Friday. Such work on Saturdays is to be conducted no earlier than 8:00 a.m. and no later than 6:00 p.m. No such work is to be conducted on Sundays. All such work is to be conducted in the described hours and only after obtaining all appropriate permits and approvals from the City of Hollywood and all other applicable agencies. Should an urgent necessity or emergency condition that requires such work to be conducted outside these hours or on Sunday arise, a request to do so shall be provided in writing to the City's Chief Building Official. No such construction work may proceed outside the above described time limitations without the previous written approval of the City of Hollywood.**

- C. Work hours as required for the various jurisdictional agency project permits must be followed at all times. No extra charge may be made for time lost due to work stoppage resulting from the creation of a public nuisance.

#### 1.03 ADDITIONAL TRAFFIC REQUIREMENTS

- A. Contractor will be responsible for submittal of Maintenance of Traffic (MOT) plans to meet all jurisdictional authorities requirements for submittals within their right-of-way limits. MOT will also be submitted for all construction proposed within FDOT ROW limits. Contractor shall be the responsible party relating to all aspects of FDOT MOT permitting. Approval must be received from the regulatory authority prior to commencement of any work within their right-of-way limits. No additional compensation will be provided for coordination, submittals, permitting, signed and sealed MOT plans to meet all regulatory agencies requirements, inspection services or costs nor any other fees related to providing MOT within the FDOT ROW limits.
- B. Night work or weekend work that may be required within the project limits needs authorization from the City. The Contractor is responsible for costs associated with all night work including but not limited to, inspector costs, police or flagmen costs, signage and MOT costs and all other costs associated with night or weekend work.
- C. No excavations shall be left exposed or unattended while Contractor is not on premises.

#### 1.04 OPEN EXCAVATIONS AND RESTORATION

- A. Contractor shall be responsible for restoration of all disturbed areas during construction with equal or better quality, quantity, material and size. Items within the project limits that may require restoration due to the Contractor's means and methods and associated work or equipment movement, staging, etc., as well as those limits outside of the work limits, and not shown on the drawings, shall be the responsibility of Contractor to restore if impacted. In addition, timely restoration shall be required by the Contractor. The open trench excavation limits may be required to be limited to minimize risk or safety issues. **The Owner and Engineer, reserve the right to notify the Contractor of any areas that will be required to be backfilled, sheeted, shored or braced including providing restoration in advance of larger scale restoration efforts or other restoration efforts which may need to be performed in advance.**
- B. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The Contractor shall, at his own expense, provide suitable and safe bridges, sheeting, shoring, and bracing to minimize open trench excavation limits.

#### 1.05 TEST PITS/HOLES

- A. Test pits and/or holes for the purpose of locating underground pipeline, utilities, or structures in advance of the construction shall be excavated and backfilled by the Contractor. Test pits shall be backfilled immediately after their purpose has been satisfied and maintained in a manner satisfactory to FDOT standards and specifications

#### 1.10 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 with precedent agreements and decisions on record with the Building and Construction Trades Department, AFL-CIO, dated June, 1973, including any amendments thereto.

#### 1.11 INCLEMENT WEATHER

- A. In the event of inclement weather, or whenever the Owner or Engineer directs; the Contractor shall, and shall cause subcontractors to protect carefully the Work and materials against damage or injury from the weather. If, in the opinion of the Owner or Engineer, any portion of work or materials have been damaged or injured by reason of failure on the part of the Contractor or any subcontractors to so protect the Work, such Work and materials shall be removed and replaced at the expense of the Contractor.

#### 1.12 COORDINATION OF WORK

- A. The Contractor shall cooperate fully so as to eliminate or minimize the creation of conflicts with all other parties performing work within the active project limits. Adjustments from time to time may be required in the Contractor's work location and/or schedule upon notice provided by FDOT or the Owner.

#### 1.13 USE OF PUBLIC/PRIVATE STREETS

- A. The use of public/private streets and roads shall be such as to provide a minimum of an inconvenience to the public and to other traffic. Any earth or other excavated materials spilled from trucks shall be removed by the Contractor and the streets and roads cleaned to the satisfaction of the Owner or Engineer.
- B. Access to properties along the Project must be maintained at all times throughout the duration of the Project.

#### 1.14 CHEMICALS

- A. All chemicals used during project construction, or furnished for project operations, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, must show approval of the State Department of Health, Florida Department of Environmental Protection and if required, also the EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with the manufacturer's instructions or recommended use procedures.

#### 1.15 SAFETY AND HEALTH REGULATIONS

- A. The Contractor shall comply with the Department of Labor Safety & Health Regulations for construction promulgated under the Occupational Safety & Health Act of 1970, (PL 91-596) and under Section 107 of the Contract Work Hours & Safety Standards Act (PL 91-54).
- B. All equipment furnished and installed under this Contract shall comply to Part 1910, Occupational Safety & Health Standards & Amendments thereto.
- C. The Contractor shall comply with the Florida Trench Safety Act (90-96, Florida Law).

#### 1.16 STATE AND FEDERAL PERMITS

- A. The Contractor is required to comply with and meet all applicable State and Federal permits. The Owner has provided the permits as included in the Appendix B of the Contract documents. All other necessary permits shall be at the Contractor's cost and the Contractor shall be required to secure them prior to associated jurisdictional work. All conditions set forth in the permits shall become part of the Contract.

#### 1.17 INSPECTION

- A. The authorized representatives and agents of the Environmental Protection Agency and Controlling State and Local Pollution Control Agencies shall be permitted to inspect all work, material, payrolls, personnel records, invoices of materials and any other relevant data and records. The Owner and Engineer shall be permitted access to any work area for the inspection of work and materials. The Owner may, at the Contractor's expense, order the uncovering or removal of any finished work if circumstances indicate faulty work or materials were used in the original installation. The Owner and Engineer shall also be permitted to inspect material invoices, payrolls or any other relevant data or records as may be necessary or required to satisfy the requirements of the Contract.

#### 1.18 ENVIRONMENTAL PROTECTION

- A. General:
  - 1. Contractor shall comply with all Federal, State and Local laws and regulations controlling pollution of the environment. He/she shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, bitumens, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter. In the event of conflict between such laws and regulations and the requirements of the Specifications, the more restrictive requirements shall apply. Environmental protection requirements specified in other Sections shall be considered as supplementing the requirements of this Section.
  - 2. Failure of the Contractor to fulfill any of the requirements of this Section may result in the Owner ordering the stopping of construction operations.



3. Failure on the part of the Contractor to perform the necessary measures to control erosion, siltation, and pollution will result in the Owner notifying the Contractor to take such measures. In the event that the Contractor fails to perform such measures within 24 hours after receipt of such notice, the Owner may stop the Work as provided above, or may proceed to have such measures performed by others. The cost of such work performed by others plus related fees by the Engineer will be deducted from monies due the Contractor on his Contract.
  4. All erosion and pollution control features installed by the Contractor shall be acceptably maintained by the Contractor during the time that construction work is being done.
  5. Repair or replace damaged or inoperative erosion and pollution control devices as directed by the Engineer or the Owner's Representative.
  6. Where there is a high potential for erosion and possible water pollution, the Contractor shall not expose, by his construction methods or procedures, an area of erosive land at any one time larger than the minimum amount required for the proper and efficient construction operation. If the exposure of any incomplete work corresponding to the exposure period required for erosion is anticipated, temporary protective measures shall be taken to prevent the erosion or collapse of land in that immediate construction area.
- B. Erosion and Pollution Control Schedule: At or prior to the preconstruction conference, the Contractor shall submit to the Owner for his information, three (3) copies of his erosion and pollution control work schedule. This schedule shall show the time relationship between phases of the Work which must be coordinated to reduce erosion and pollution, and shall describe construction practices and temporary control measures which will be used to minimize erosion and pollution. The schedule shall also show the Contractor's proposed method of erosion control on haul roads and borrow and material pits, and his plan for disposal of waste materials or other sources of pollution. Maps or other documents may also be required to show the proposed final surface gradient of proposed borrow pits, soil type base course pits, and waste areas. No work shall be started until the erosion and pollution control schedules and methods of operations have been submitted to the Owner for his information.
- C. Air Pollution Controls:
1. Contractor shall control dust caused by his operations in the construction of the Project, including but not specifically limited to the following:
    - a. Clearing, grubbing, and stripping.
    - b. Excavation and placement of embankment.
    - c. Cement and aggregate handling.

- d. Limerock stabilization.
  - e. Use of haul roads.
  - f. Sandblasting or grinding.
- 2. Contractor shall control air pollution from the following causes in constructing the project:
  - a. Volatiles escaping from asphalt and cutback materials.
  - b. Use of herbicides or fertilizers.
- 3. Control of dust and other air pollutants by the Contractor shall include:
  - a. Exposing the minimum area of land.
  - b. Applying temporary mulch with or without seeding.
  - c. Use of water sprinkler trucks.
  - d. Use of covered haul trucks.
  - e. Use of stabilizing agents in solution.
  - f. Use dust palliatives and penetration asphalt on temporary roads.
  - g. Use of wood chips in traffic and work areas.
  - h. Use of vacuum-equipped sandblasting systems.
  - i. Use of plastic sheet coverings.
  - j. Restricting the application rate of herbicides to recommended dosage. Materials shall be covered and protected from the elements. Application equipment and empty containers shall not be rinsed and discharged so as to pollute a stream, river, lake, pond, water impoundment, or the ground water.
  - k. Relay of operations until climate or wind conditions dissipate or inhibit the potential pollutants.
- D. Open Burning of Combustible Wastes: No open burning of combustible waste materials or vegetation shall be permitted. All waste materials shall be removed from the site or within public rights-of-way and disposed in a legal manner.
- E. Permanent and Temporary Water Pollution Control (Soil Erosion):

1. Sufficient precautions shall be taken during construction to minimize the run-off of polluting substances such as silt, clay, fuels, oils, bitumens, calcium chloride, or other polluting materials harmful to humans, fish, or other life, into the supplies and surface waters of the State. Control measures must be adequate to assure that turbidity in the receiving water will not be increased more than allowed by the State or controlling agency. Such measures may consist of construction of berms, dikes, dams, drains and sediment basins, or use of fiber mats, woven plastic filter cloths, gravel, mulches, quick growing grasses, sod, bituminous spray and other erosion control devices or methods approved by the State or controlling agency.
2. The Contractor shall promptly clear all waterways and drainage patterns of false work, piling, debris, or other obstructions placed during construction work and not a part of the finished work.
3. The Contractor shall remove and dispose of silt accumulations as directed by the Engineer or the Owner's Representative.
4. If new and additional erosion control structures are to be installed, under this project, to prevent possible future erosion as a result of work under this contract, they shall be constructed concurrently with the other work, as early as possible, and as conditions permit.

#### 1.19 TREE AND SHRUB PROTECTION AND TRIMMING

- A. Contractor shall exercise care to protect all trees and shrubs designated to remain. Trees and shrubs outside construction limits shall remain and shall be protected and where damaged, restored to original condition. Contractor shall obtain approval from the Owner prior to removing or trimming any trees. Trees damaged within construction limits due to negligence shall be restored or replaced to meet original condition.
- B. Tree limbs which interfere with construction operations and are approved for pruning shall be neatly cut with sharp pruning instruments; do not break or chop. All cut faces shall be coated with an approved tree pruning compound which is waterproof, antiseptic, elastic and free of kerosene, coal tar, creosote and other substances harmful to plants. Pruning operations shall be extended to restore the natural shape of the entire tree or shrub. Do not allow fires under or adjacent to trees or other plants which are to remain.
- C. Contractor shall protect tree and shrub root systems. Do not store construction materials, debris or excavated materials beyond construction limits. Do not permit vehicles or construction equipment beyond the limits of utility line construction. Restrict foot traffic to prevent excessive compaction of soil over root system. Excavated material shall be stockpiled away from tree drip lines as approved by the Engineer. Protect tree and shrub root systems from damage due to noxious materials in solution caused by run-off or spillage during construction operations, or drainage from stored materials. Protect root systems from flooding, erosion or excessive wetting resulting from dewatering operations. Excavate within the drip line of trees only when approved

by the Engineer. Where trees are designated to remain within the limits of construction and trenching for utilities is required within tree drip lines, cut roots with sharp pruning instruments; do not break or chop. Paint roots over 2" caliper with approved tree pruning compound.

- D. Trees damaged by construction operations shall be repaired promptly after damage occurs to prevent progressive deterioration of damaged trees. Removed trees, branches, roots and other excess materials shall be removed from the construction site to an approved landfill at the expense of the Contractor.

#### 1.20 SITE CLEANUP

- A. The Contractor shall keep the working area free at all times of tools, materials and equipment not essential to the progress of the Work. Debris, waste materials, and rubbish shall be properly disposed of and not allowed to accumulate. If the Contractor should fail to do this, the Owner will make the necessary arrangements to effect the cleanup by others and will back charge the cost to the Contractor. If such action becomes necessary on the part of and in the opinion of the Owner, the Owner will not be responsible for the inadvertent removal of material which the Contractor would not have disposed of had he effected the required cleanup.
- B. Where material or debris has washed or flowed into or been placed in watercourses, ditches, gutters, drains, catch basins, or elsewhere as result of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during progress of the Work, and the ditches, channels, drains etc., kept in a clean and neat condition.
- C. On or before the completion of the Work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around privies, houses, and other buildings used by him; shall remove all rubbish from any grounds he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations, in a neat and satisfactory condition.
- D. The Contractor shall restore the entire project site to its original or better condition, with the exception of any area(s) designated for alteration by the Contract Documents. The Contractor shall restore or replace; when and as directed, any public or private property damaged by his work, equipment, or employees to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration.
- E. The Contractor shall thoroughly clean all materials and equipment installed by him and his subcontractors and on completion of the Work shall deliver it undamaged and in fresh and new appearing condition.

## 1.21 LAWS AND REGULATIONS

- A. It shall be the responsibility of the Contractor to give all notices and comply with all the laws, rules, regulations, ordinances, etc., that may be applicable at the time the Work is started on the project. Should the Contractor discover the Drawings or Specifications are contradictory to, or in variance with the above, he shall notify the Engineer immediately, in writing, in order that any required changes or modifications can be made. It is not the Contractor's responsibility to make certain that the Drawings or Specifications are in non-compliance with any of the above; however, should he be aware of any existing discrepancy, or have reason to believe such may exist and performs work without proper notice to the Engineer, the Contractor shall be responsible for any cost involved in making the necessary alterations or corrections.

## 1.22 CONTRACTOR'S USE OF PREMISES

- A. All project construction work will be accomplished on the Owner's property, public/private rights-of-way/easements or within temporary construction easements and the Contractor shall confine his activity to those designated areas. The Contractor shall not enter upon private property for any reason without securing prior permission from the property Owner. Such permission, including any stipulations, shall be in writing and a copy shall be delivered to the Engineer prior to the Contractor's entry or occupation of the subject property. This requirement will be rigidly enforced, particularly with regard to the utilization of vacant areas adjacent to the work site for the storage of materials or parking equipment.
- B. The Contractor shall perform his work in such manner that he will not damage adjacent public or private property. Any damage to existing physical structures or utility services shall be repaired or restored promptly at no expense to the Owner.
- C. The Contractor shall avoid damage to and preserve all existing vegetation (grass, shrubs, trees, etc.) on or near the work area which do not, within reason, interfere with construction. The Contractor will be responsible for and required to replace or restore all such vegetation damaged or destroyed at no cost to the Owner. The Contractor will also be responsible for any unauthorized cutting or damage to trees, shrubs, etc., and also damage caused by careless operation of equipment, storage of materials and rutting or tracking of grass by equipment.
- D. The Contractor shall conduct access, hauling, filling, and storage operations as specified herein and as shown on the Contract Drawings.
  - 1. On-site borrow areas are designated as follows: Suitable material, as approved by Engineer, from excavations for project structures. Any additional borrow material required shall be provided by the Contractor from off-site.
  - 2. On-site spoil areas will become property of the Contractor and are to be disposed off-site.
- E. Construct all fill areas so runoff will not flood improved areas.

- F. All connections to existing piping systems shall be made as shown or indicated on the Drawings after consultation, cooperation, and coordination with the Owner. Some such connections may have to be made during off-peak hours (late night, early morning, or weekend hours). The Contractor shall give a minimum of 72 hours' notice to the Owner when tie-ins with the existing plant utilities are required.
- G. 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.

#### 1.23 HAZARDOUS LOCATIONS

- A. The Contractor shall be responsible for identification of hazardous locations, appropriate construction methods, and all other safety issues.

#### 1.24 ADDITIONAL PROVISIONS

- A. The Contractor shall provide at his own cost all necessary temporary facilities for access to, and for protection of, all existing structures. The Contractor is responsible for all damage to existing structures, equipment, and facilities caused by his construction operations, and must repair all such damage when and as ordered by the Engineer.

#### 1.25 DRAINFIELD AND FRENCH DRAIN RESTORATION

- A. **Contractor shall restore all existing drainfields and french drains (exfiltration trench) to equal or better condition if impacted during construction efforts. Laterals, services or other impacts to drainfields and french drains (exfiltration trench) must follow FDOT standards and specifications for restoration.**

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01041

### PROJECT COORDINATION

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

Furnish personnel and equipment that will be efficient, appropriate, and large enough to secure a quality of work that is acceptable to the City/Engineer and a rate of progress that will ensure the completion of the work within the Contract Time. If at any time such personnel appears to the Engineer to be inefficient, inappropriate, or insufficient for securing the quality of work aforesaid, he may order the Contractor to increase the efficiency, change the personnel or increase the personnel and equipment, and the Contractor shall conform to such order at no additional cost to the City. Failure of the Engineer to give such order shall in no way relieve the Contractor or his obligations to secure the quality of the work and rate of progress. **A phased construction schedule and plan/exhibit must be provided by the Contractor prior to commencement of work.**

#### PART 2 - PRODUCTS (NOT USED)

#### PART 3 - EXECUTION

##### 3.01 CONSTRUCTION COORDINATION

- A. The Contractor is required to coordinate construction activities to maintain the project schedule and complete the work within the Contract Time. Locations of work must be approved by the City prior to installation.
- B. All work must be coordinated by the Contractor throughout the duration of the project, including but not limited to, phasing of work efforts to ensure that project sequencing and work is properly performed without rework, delays, added costs, or circumstances that could have been avoided if adequate coordination and sequencing/phasing of the project was performed. Phased work may include multiple partial clearance submittals in order to construct the infrastructure within the proposed project limits. All phasing, coordination, permitting and clearances, etc. will be at no additional cost to the City. The Contractor shall plan their work and crews as needed to allow for phased construction and meet the project schedule and deadlines.
- C. The Contractor shall be responsible for coordinating all sub-contractors and trades and in incorporating the work of all subcontractors or trades where necessary and as required.
- D. Cutting and patching, drilling, and fitting shall be carried out where required by the trade or subcontractor having jurisdiction; however, the Contractor shall be solely responsible for this work.

### 3.02 PROTECTION OF CONSTRUCTION AND EQUIPMENT

- A. All newly constructed work shall be carefully protected from damage in any way. All portions damaged shall be reconstructed by the Contractor at his expense.
- B. Protect all structures in a suitable manner to prevent damage. Should any part of a structure become heaved, cracked or otherwise damaged, all such damaged portions of the work shall be completely repaired and made good by the Contractor at his own expense and to the satisfaction of the Engineer. If in the final inspection of the work, any defects, faults, or omissions are found, the Contractor shall cause the same to be repaired or removed and replaced by proper materials and workmanship without extra compensation for the materials, labor and equipment required. Further, the Contractor shall be fully responsible for the satisfactory maintenance and repair of the construction and other work undertaken herein and any damages caused by the performance of the Work, for at least the warranty period described in the Contract.
- C. The Contractor shall completely restore all pavement, sidewalk, curbing, landscaping, swales, culverts, or other areas disturbed by construction activities.

END OF SECTION



## SECTION 01050

### FIELD ENGINEERING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: The Contractor shall provide and pay for field engineering service for Project.
  - 1. Survey work required in execution of Work.
  - 2. Civil, structural, or other professional engineering services specified or required to execute Contractor's construction methods.
  - 3. The method of field staking for the construction of the Work shall be at the option of the Contractor. The Owner has provided the engineering surveys necessary to establish reference points which in his judgement are necessary to enable the Contractor to proceed with his work.
  - 4. The accuracy of any method of staking shall be the responsibility of the Contractor. All engineering for vertical and horizontal control shall be the responsibility of the Contractor.
  - 5. The Contractor shall be held responsible for the preservation of all stakes and marks. If any stakes or marks are carelessly or willfully disturbed by the Contractor, the Contractor shall not proceed with any work until he has established such points, marks, lines, and elevations as may be necessary for the prosecution of the Work.
  - 6. The Contractor shall retain the services of a registered land surveyor licensed in the State of Florida to identify existing control points and maintain a survey during construction.
- B. Related Requirements Described Elsewhere:
  - 1. Conditions of the Contract.
  - 2. Summary of Work: Section 01010.
  - 3. Project Record Documents and Survey: Section 01720.

##### 1.02 QUALIFICATIONS OF SURVEYOR OR ENGINEER

- A. Qualified engineer or registered land surveyor, acceptable to the Owner and the Engineer.

- B. Registered professional engineer of the discipline required for the specific service on the Project, currently licensed in the State of Florida.

#### 1.03 SURVEY REFERENCE POINTS

- A. Locate and protect control points prior to starting site work, and preserve all permanent reference points during construction.
  - 1. Make no changes or relocations without prior written notice to the Engineer.
  - 2. Report to the Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
  - 3. Require surveyor to replace Project control points which may be lost or destroyed at no additional cost to the Owner. Establish replacement based on original survey control.

#### 1.04 PROJECT SURVEY REQUIREMENTS

- A. Establish a minimum of two (2) permanent bench marks on site, referenced to data established by survey control points.
  - 1. Record locations, with horizontal and vertical data, on Project Record Documents.
- B. Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means:
  - 1. Site improvements:
    - a. Stakes for grading, fill, and topsoil replacement.
    - b. Utility slopes and invert elevations.
  - 2. Batter boards for structure.
  - 3. Building foundation, column locations, and floor levels.
  - 4. Controlling lines and levels required for mechanical and electrical trades.
- C. From time to time, verify layouts by same methods.

#### 1.05 RECORDS

- A. Maintain a complete, accurate log of all control and survey work as it progresses.

- B. At the end of the project, submit a certified site survey at a minimum 1 inch equals 20 feet scale on sheets 24 inches by 36 inches (or scale of original drawings), indicating the corners and location of all new structures and slabs and elevations of wastewater and water facilities, pavement areas, sidewalks, finished floors, vaults, and above grade piping.
- C. At the end of the project, submit a certified survey at the same scale as the Engineer's line drawings indicating elevations and stationing at 100-foot pipe increments and at all valve and fitting locations.
- D. See Section 01720 – Project Record Documents and Survey, for project specific requirements.

#### 1.06 SUBMITTALS

- A. Submit name and address of surveyor and professional engineer to the Engineer.
- B. On request of the Engineer, submit documentation to verify accuracy of field engineering work.
- C. Submit certificate signed by a registered engineer or surveyor certifying that elevations and locations of improvements are in conformance with the Contract Documents, or if not in conformance, certify as to variances from the Contract Documents.
- D. Submit drawings showing locations of all structures constructed. This drawing shall be included with the Project Record Documents.

#### PART 2 - PRODUCTS (NOT USED)

#### PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01070

### APPLICABLE STANDARDS AND CODES

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENT

- A. Wherever references are made in these specifications to any published standards, codes, standard specifications, or other published data of the various national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only. References shall be to the latest versions currently in effect, unless otherwise specified by the City and/or Engineer. As a guide to the user of these specifications, the following acronyms or abbreviations which may appear in these specifications shall have the meanings indicated herein.
- B. The following is a partial list of typical abbreviations which may be used in the Specifications, and the organizations to which they refer. Abbreviated titles for other governing standards are used throughout these specifications and, although most of them are widely known, their complete titles are given below to avoid misunderstanding:
  - 1. AAMA - Architectural Aluminum Manufacturer's Association
  - 2. AASHTO - American Association of the State Highway and Transportation Officials
  - 3. ACI - American Concrete Institute
  - 4. ACI - American Concrete Institute
  - 5. ACIFS - American Cast Iron Flange Standards
  - 6. ACOE - Army Corps of Engineers
  - 7. ACPA - American Concrete Pipe Association
  - 8. AFBMA - Anti-Friction Bearing Manufacturer's Association
  - 9. AGMA - American Gear Manufacturer's Association
  - 10. AGA - American Gas Association
  - 11. AGMA - American Gear Manufacturers Association
  - 12. AHGDA - American Hot Dip Galvanizers Association

13. AI - The Asphalt Institute
14. AIA - American Institute of Architects
15. AISC - American Institute of Steel Construction
16. AISI - American Iron and Steel Institute
17. AITC - American Institute of Timber Construction
18. AMCA - Air Moving and Conditioning Association
19. ANSI - American National Standards Institute, Inc.
20. APA - American Plywood Association
21. API - American Petroleum Institute
22. APHA - American Public Health Association
23. APWA - American Public Works Association
24. ASA - Acoustical Society of America
25. ASAE - American Society of Agriculture Engineers
26. ASCE - American Society of Civil Engineers
27. ASHRAE - American Society of Heating, Refrigerating, and Air-Conditioning Engineers
28. ASLE - American Society of Lubricating Engineers
29. ASME - American Society of Mechanical Engineers
30. ASMM - Architectural Sheet Metal Manual
31. ASSE - American Society of Sanitary Engineers
32. ASTM - American Society for Testing and Materials
33. AWI - Architectural Woodwork Institute
34. AWWA - American Water Works Association
35. AWPI - American Wood Preservers Institute
36. AWS - American Welding Society
37. AWWA - American Water Works Association

38. BCEPGMD - Broward County Environmental Protection and Growth Management Department (formerly BCEPD)
39. BHMA - Builders Hardware Manufacturer's Association
40. CMA - Concrete Masonry Association
41. CRSI - Concrete Reinforcing Steel Institute
42. CSA - Canadian Standards Association
43. DHI - Door and Hardware Institute
44. DIPRA - Ductile Iron Pipe Research Association
45. EIA - Electronic Industries Association
46. ETL - Electrical Test Laboratories
47. FBC - Florida Building Code
48. FDEP - Florida Department of Environmental Protection
49. FDOT - Florida Department of Transportation
50. FS - Federal Specifications
51. ICEA - Insulated Cable Engineers Association
52. IEEE - Institute of Electrical and Electronics Engineers
53. IES - Illuminating Engineering Society
54. IPCEA - Insulated Power Cable Engineers Association
55. ISA - Instrument Systems and Automation
56. ISO - International Organization for Standardization
57. MBMA - Metal Building Manufacturers Association
58. MMA - Monorail Manufacturers Association
59. MTI - Marine Testing Institute
60. NAAMM - National Association of Architectural Metal Manufacturers
61. NACE - National Association of Corrosion Engineers
62. NBS - National Bureau of Standards

- 63. NCPI - National Clay Pipe Institute
- 64. NEC - National Electrical Code
- 65. NEMA - National Electrical Manufacturer's Association
- 66. NFPA - National Fire Protection Association
- 67. NLMA - National Lumber Manufacturers Association
- 68. NIOSH - National Institute of Occupational Safety and Health
- 69. NIST - National Institute of Standards and Testing
- 70. NRCA - National Roofing Contractors Association
- 71. NSF - National Science Foundation
- 72. OSHA - Occupational Safety and Health Administration
- 73. PCA - Portland Cement Association
- 74. SMACCNA - Sheet Metal and Air Conditioning Contractors National Association
- 75. SAE - Society of Automotive Engineers Standards
- 76. SHBI - Steel Heating Boiler Institute
- 77. SMACCNA - Sheet Metal and Air Conditioning Contractors National Association
- 78. SSPC - Steel Structures Painting Council
- 79. SSPWC - Standard Specifications for Public Works Construction
- 80. SFWMD - South Florida Water Management District
- 81. UL - Underwriters Laboratories, Inc.

C. Contractor shall, when required, furnish evidence satisfactory to the Engineer that materials and methods are in accordance with such standards where so specified.

D. In the event any questions arise as to the application of these standards or codes, copies shall be supplied on site by the Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01200

### PROJECT MEETINGS

#### PART 1 - GENERAL

##### 1.01 PRECONSTRUCTION

- A. A mandatory preconstruction meeting will be held to acquaint representatives of the City and various other agencies with those in responsible charge of the Contractor's activities for the project. **Unless otherwise directed by the City, no construction activities relating to this contract shall commence until after the pre-construction meeting is adjourned, and until any pending business from the meeting has been addressed by the Contractor to the satisfaction of the City and Engineer.** The meeting will cover such subjects as the following:

1. Insurance certificates
2. Permits, licenses, notifications
3. Affirmative action employment
4. Construction schedules/phasing plans
5. Cost breakdown and applications for payment
6. Material deliveries, storage and payments
7. Shop drawings and submittals
8. Job-site inspection by the Engineer and/or City's RPR
9. Safety and emergency action procedures
10. Operations of the existing utilities
11. Field offices, security and other housekeeping procedures
12. List of subcontractors
13. Liquidated damages
14. Communications



15. Coordinating
16. All other appropriate and project specific matters

#### 1.02 PROGRESS

- A. A progress meeting shall be held on a once-per-month basis, or as needed to monitor the work progress and obtain necessary construction updates, for the purpose of coordinating and expediting the work. The Contractor, as a part of his obligations under the Contract, shall attend in person or by an authorized representative to attend and to act on his behalf. The Engineer will conduct such meetings and as necessary, with the Contractor's input, prepare the meeting agenda and meeting notes. The Contractor is required to provide a knowledgeable and professional Project Manager who will represent the Contractor in discussions with the City and Engineer and who will maintain a professional demeanor.
- B. In addition, the Engineer or Contractor may call for special job site meetings for the purpose of resolving unforeseen problems or conflicts which may impede the construction schedule. The City will prepare a brief summary report of the decisions or understandings concerning each of the items discussed at the meeting.
- C. At monthly progress meetings, the Contractor shall submit to the Engineer for review a look back schedule for work completed within the last three (3) weeks, a current look ahead schedule for the work anticipated to be completed within the next three (3) weeks, and an overall project progress schedule.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01300

### SUBMITTALS

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENT

- A. This section specifies the means of all submittals. All submittals, whether the final destination is to the City, Engineer, or other representatives of the City, shall be directed through the Engineer. A summary of the key types of submittals and the number of copies required is as follows:

<u>Copies to Engineer/Owner</u>	<u>Type of Submittal (not inclusive)</u>
1 (digitally)	Construction schedule
4 originals	Schedule of payment items
2 DVDs	Audio visual preconstruction record
1 (digitally)	Shop drawings
4 originals	Certificates of compliance
2 originals	Warranties
1*	Product samples
2 (digitally in CAD) <u>AND</u> 2 originals signed and sealed	As-builts/Record drawings
2 digitally in CAD	Final Record Drawings

\*Unless otherwise required in the specific Section where requested.

##### 1.02 SUBMITTAL PROCEDURES

- A. Transmit each submittal with a form acceptable to the Engineer, clearly identifying the project Contractor, the enclosed material and other pertinent information specified in other parts of this section. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- B. Revise and resubmit submittals as required, identify all changes made since previous submittals. Resubmittals shall be noted as such.

- C. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

#### 1.03 CONSTRUCTION PROGRESS SCHEDULE

- A. The Contractor is responsible for submitting a phased project schedule, including a phased layout or exhibit showing each phase of the work, the timing for each phase of the work, and the progressive for successive construction events that must be completed once the initial phase(s) of the work are completed. The schedule should include, but not be limited to, phased MOT plans, phased infrastructure plans, partial clearances for phasing of the work and tie-ins, sequencing, coordination with various jurisdictional agencies having control over the ROW limits, notifications, crews or added resources needed for the phasing, and all other items for a successful and timely construction project to meet the project schedule.
- B. The Contractor shall have the capability of preparing and utilizing the specified construction progress scheduling techniques. A statement of capability shall be submitted in writing to the Engineer with the return of the executed Agreement to the City and will verify that either the Contractor's organization has in-house capability qualified to use the technique or that the Contractor employs a consultant who is so qualified. Capability shall be verified by description of the construction projects to which the Contractor or its consultant has successfully applied the scheduling technique and which were controlled throughout the duration of the project by means of systematic use and updating of the construction progress schedule, the network analysis and associated reports. The submittal shall include the name of the individual on the Contractor's staff who will be responsible for the construction progress schedule and associated reports and for providing the required updating information of same. The Contractor shall submit its proposed progress (baseline) schedule to the Engineer for review and comment within thirty days of the Notice to Award. The Engineer shall have the authority to determine acceptability/correctness of the schedule logic and activity interrelationships. The use of extraneous, nonworking activities and activities which add restraints to the construction schedule shall not be accepted. Baseline schedules that do not meet their contract completion dates shall not be accepted.
- C. The Contractor's progress schedule (baseline and monthly updates) shall be computer generated and resource loaded. Each construction progress schedule, and associated report shall include the following tabulations: a list of activities in numerical order, a list of activity precedence, schedules sequenced by Early Start Date, Total Float, and Late Start Date. Each schedule and report shall include the following minimum items.
  - 1. Activity Numbers
  - 2. Estimated Duration

3. Activity Description
  4. Early Start Date (Calendar Dated)
  5. Early Finish Date (Calendar Dated)
  6. Latest Allowable Start Date (Calendar Dated)
  7. Latest Allowable Finish Date (Calendar Dated)
  8. Status (whether critical)
  9. Estimated Cost of The Activity
  10. Total Float and Free Float
- D. In addition, each construction progress schedule, network analysis and report shall be prefaced with the following summary data:
1. Contract Name and Number
  2. Contractor's Name
  3. Contract Duration and Float
  4. Contract Schedule
  5. The Effective or Starting Date of The Schedule (the date indicated in the Notice-to-Proceed)
- E. The work day to calendar date correlation shall be based on an 8-hour day and 40-hour week with adequate allowance for holidays and all other special requirements of the Work. A total of six (6) days for adverse weather shall also be allowed for in the progress schedule.
- F. If the Contractor desires to make changes in its method of operating which affect the construction progress schedule and related items, the Contractor shall notify the Engineer in writing stating what changes are proposed and the reason for the change. If the Engineer accepts these changes, in writing, the Contractor shall revise and submit, without additional cost to the City, all of the affected portions of the construction progress schedule, and associated reports. The construction progress schedule and related items shall be adjusted by the Contractor only after prior acceptance, in writing by the Engineer. Adjustments may consist of changing portions of the activity sequence, activity durations, division of activities, or other adjustments as may be required. The addition of extraneous, nonworking activities and activities which add restraints to the construction progress schedule shall not be accepted.

- G. Except where earlier completions are specified, schedule dates which show completion of all Work prior to the contract completion date shall, in no event, be the basis for claim for delay against the City by the Contractor.
- H. Construction progress schedules and related items which contain activities showing negative float or which extend beyond the contract completion date will not be accepted by the Engineer.
- I. Whenever it becomes apparent from the current construction progress schedule and associated reports that delays to the critical path have resulted and the contract completion date will not be met, or when so directed by the Engineer, the Contractor shall take some or all of the following actions at no additional cost to the City. They shall submit to the Engineer for approval, a written statement of the steps they intend to take to remove or arrest the delay to the critical path in the current construction progress schedule, including a computer-generated schedule revision to reflect proposed actions.
  - 1. Increase construction manpower in such quantities and crafts as will substantially eliminate the backlog of work.
  - 2. Increase the number of working hours per shift, shifts per day, working days per week, the amount of construction equipment, or any combination of the foregoing, sufficiently to substantially eliminate the backlog of work.
  - 3. Reschedule activities to achieve maximum practical concurrency of accomplishment of activities, and comply with the revised schedule.
- J. If when so requested by the Engineer, the Contractor should fail to submit a written statement of the steps they intend to take or should fail to take such steps as reviewed and accepted in writing by the Engineer, the Engineer may direct the Contractor to increase the level of effort in manpower (trades), equipment and work schedule (overtime, weekend and holiday work, etc.) to be employed by the Contractor in order to remove or arrest the delay to the critical path in the current construction progress schedule, and the Contractor shall promptly provide such level of effort at no additional cost to the City.
- K. If the completion of any activity, whether or not critical, falls more than 100 percent behind its previously scheduled and accepted duration, the Contractor shall submit for approval a schedule adjustment showing each such activity divided into two activities reflecting completed versus uncompleted work.
- L. Shop drawings which are not approved on the first submittal or within the time scheduled, and equipment which does not pass the specified tests and certifications shall be immediately rescheduled.

- M. The contract time will be adjusted only in accordance with the General Requirements and other portions of the Contract Documents as may be applicable. If the Engineer finds that the Contractor is entitled to any extension of the contract completion date, the Engineer's determination as to the total number of days extension shall be based upon the current construction progress schedule and on all data relevant to the extension. Such data shall be included in the next updating of the schedule and related items. Actual delays in activities which, according to the construction progress schedule, do not affect any contract completion date will not be the basis for a change therein.
- N. From time to time it may be necessary for the contract schedule of completion time to be adjusted by the City in accordance with the General Requirements and other portions of the Contract Documents as may be applicable. Under such conditions, the Engineer will direct the Contractor to reschedule the Work or contract completion time to reflect the changed conditions, and the Contractor shall revise the construction progress schedule and related items accordingly, at no additional cost to the City.
- O. Available float time may be used by the City through the City's Engineer.
- P. The City controls the float time and, therefore, without obligation to extend either the overall completion date or any intermediate completion dates, the City may initiate changes that absorb float time only. City initiated changes that affect the critical path on the network diagram shall be the sole grounds for extending the completion dates. Contractor initiated changes that encroach on the float time may be accomplished only with the City's concurrence. Such changes, however, shall give way to City initiated changes competing for the same float time.
- Q. To the extent that the construction project schedule, or associated report or any revision thereof shows anything not jointly agreed upon or fails to show anything jointly agreed upon, it shall not be deemed to have been accepted by the Engineer. Failure to include on a schedule 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 review of the schedule by the Engineer.
- R. Review and acceptance of the construction progress schedule, and related reports, by the Engineer is advisory only and shall not relieve the Contractor of the responsibility for accomplishing the Work within the contract completion date. Omissions and errors in the construction progress schedule, and related reports shall not excuse performance less than that required by the Contract and in no way make the Engineer an insurer of the Contractor's success or liable for time or cost overruns flowing from any shortcomings in the construction progress schedule, and related reports.
- S. The Contractor shall present and discuss the proposed schedule at the preconstruction conference.

- T. The construction progress schedule shall be based upon the precedence diagramming method of scheduling and shall be prepared in the form of a horizontal bar chart showing in detail the proposed sequence of the Work and identifying all construction activities included but not limited to yard piping, all structures and treatment units and all related Work specified herein to be performed under the Contract. The schedule shall be time scaled, identifying the first day of each week, with the estimated date of starting and completion of each stage of the Work in order to complete the project within the contract time. The project critical path shall be clearly identified in color or by other means acceptable to the Engineer.
- U. The progress schedule shall be plotted on 22-inch by 34-inch and 11-inch by 17-inch paper and shall be revised and updated monthly, depicting progress through the last day of the current month and scheduled progress through completion. Ten (one 22-inch by 34-inch and nine 11-inch by 17-inch), schedules, required schedule "sorts" (tabulations) and an electronic copy of the baseline schedule shall be submitted for review and acceptance. Five (one 22-inch by 34-inch and four 11-inch x 17-inch) up-to-date copies of the schedule and five copies of tabulations and an electronic copy shall be submitted along with the application for monthly progress payments for the same period.
- V. The construction progress schedule shall be developed and maintained using Primavera Sure Trak as manufactured by Primavera Systems, Inc., or equal.

#### 1.04 SCHEDULE OF PAYMENT VALUES

- A. The Contractor shall submit a Schedule of Payment Values, for all items in the proposal that are to be paid for on a lump sum basis. The schedule shall contain the labor and material values of the component parts of Work for the purpose of making progress payments during the construction period. The Schedule of Payment Values shall directly correlate on an item by item basis (unless otherwise accepted by the Engineer) to each individual activity detailed in the construction progress schedule.
- B. The schedule shall be given in sufficient detail for the proper identification of Work accomplished. Each item shall include its proportional share of all costs including the Contractor's overhead, contingencies, and profit. The sum of all scheduled items shall equal the total value of the Contract.
- C. If the Contractor anticipates the need for payment for materials stored on the project site, it shall also submit a separate list covering the cost of materials, delivered and unloaded with taxes paid. This list shall also include the installed value of the item with coded reference to the Work items in the Schedule of Payment Items.

- D. The Contractor shall expand or modify the above schedule and materials listing as required by the Engineer's initial or subsequent reviews.
- E. The Contractor shall update the Schedule of Payment Values monthly for reviewing by the Engineer. The payment applications shall be reviewed by the Engineer in accordance with the updated Schedule of Payment Values.

#### 1.05 SHOP DRAWINGS, PROJECT DATA AND SAMPLES

- A. General: A Shop Drawing Submittal Schedule shall be provided by the Contractor within thirty (30) days of the Notice to Proceed.
- B. The Contractor shall furnish for review four (4) copies of shop drawings, project data, samples and other submittal items required by the Contract Documents. Two (2) copies shall be returned to the Contractor stamped "Furnish as Submitted" or "Furnish as Corrected". Where major corrections are indicated, two (2) copies will be returned stamped "Revise and Resubmit" and a new submittal is required (4 copies).
- C. The review of the Contractor's submissions shall in no way relieve the Contractor of any of his responsibilities under the Contract. An acceptance of a submission shall be interpreted to mean that there are no specific objections to the submitted material, subject to conformance with the Contract Drawings and Specifications.
- D. All submissions shall be dated and properly referenced to the specifications section and Contract Drawing number. The submittal number shall match the following submittal numbering system (or an equivalent system as approved by the Engineer):
- E. Submittal Numbering System
  - 1. Package ID: The package number will reflect the CSI (specification) section number as it appears in the specifications.
  - 2. Subgroup ID: The submittal number will include the CSI number followed by two additional codes. The first will define the type of submittal as follows:
    - 01 - Product Data, Specifications, Cut Sheets, Manufacturers certification or approval letters
    - 02 - Shop Drawings
    - 03 - Product Samples and Mock-Ups
    - 04 - Special requirements as required in the contract documents
    - 05 - As-Built Drawings



06 - Warranties

07 - O&M

08 - Spare Parts

3. The second code will identify individual submittals within that submittal type. The number to the left of the decimal represents the submittal number and the number to the right of the decimal represents the revision number.

Example:

<u>Package</u>	<u>Submittal</u>	<u>Description</u>
03300	03300-01-1.1	Concrete Admixture A, First Submittal
06400	06400-01-1.2	Re-submittal
		First Submittal
		Product Data
		Finish Carpentry

4. By the following this code system, all submittals may be entered into the Document Tracking System prior to receipt of submittals. When a particular submittal is received, locate the entry in the Document Tracking project file, add the appropriate information and process. The Document Tracking System will provide the next sequence number.
- F. Shop Drawings and Project Data within practical limits shall be submitted as a single complete package for any operating system and shall include all items of equipment and mechanical units involved in the functioning of such system. Where applicable, the submission shall include elementary wiring diagrams showing circuit functioning and necessary interconnection wiring diagrams for construction.
- G. All submissions shall bear the Contractor's stamp certifying that they have been checked for conformance and accuracy. Submissions without the Contractor's stamp of approval will not be reviewed by the Engineer and will be returned to the Contractor.
- H. For any submission containing any departure from the Contract Documents and the Contractor shall include proper explanation in his letter of submittal.
- I. Work on fabricated or special items shall not be commenced until the required submission information has been reviewed and accepted.

- J. Standard items shall not be assembled or shipped until the required submission information has been reviewed and accepted.
- K. Prior review actions shall not relieve the Contractor of the responsibility for correcting errors, deviations, and/or omissions discovered at a later date.
- L. Shop Drawings: Shop Drawings include, but are not limited to, layout drawings, installation drawings, construction drawings, certified and interconnecting wiring diagrams, etc. The Contractor shall be responsible for security of all the information, details, dimension, drawings, etc. necessary to prepare submission drawings required and necessary under this Contract and to fulfill all other requirements of his Contract. The Contractor shall secure such information, details, drawings, etc. from all possible sources including the Contract Drawings, drawings prepared by subcontractors, Engineer, manufacturers, Contractors, etc.
- M. Submission drawings shall accurately and clearly present the following:
  - 1. All working and installation dimensions.
  - 2. Arrangement and sectional views.
  - 3. Units of equipment in the proposed position for installation, details of required attachments and connections and dimensioned locations between units and in relation to the structures.
  - 4. Necessary details and information for making connections between the various trades including but not limited to, power supplies and interconnection wiring between units, accessories, appurtenances, etc.
- N. Product Data: Where manufacturer's publications in the form of catalogs, brochures, illustrations, or other data sheets are submitted in lieu of prepared shop drawings, such submission shall specifically indicate the particular item offered. Identification of such items and relative pertinent information shall be made with indelible ink. Submissions showing only general information will not be accepted.
- O. Product data shall include materials of construction, dimensions, performance characteristics, capacities, wiring diagrams, piping and controls, etc.
- P. Samples: Contractor shall furnish for review all samples as required by the Contract Documents or requested by the Engineer.
- Q. Samples shall be of sufficient size or quantity to clearly illustrate the quality, type, range of color, finish or texture and shall be properly labeled to show the nature of the work where the material represented by the sample will be used.

- R. Samples shall be checked by the Contractor for conformance to the Contract Documents before being submitted to the Engineer and shall bear the Contractor's stamp certifying that they have been so checked. Transportation charges on samples submitted to the Engineer shall be prepaid by the Contractor.
- S. Engineer's review will be for compliance with the Contract Documents, and his comments will be transmitted to the Contractor with reasonable promptness.
- T. Accepted samples will establish the standards by which the completed work will be judged.

1.06 OPERATION AND MAINTENANCE INSTRUCTIONS (MANUALS)

- A. Individual Instructions: The Contractor, through manufacturer's representatives or other qualified individuals, shall provide instruction of designated employees of the Owner in the operation and care of all equipment furnished.
- B. Written Instructions: The Contractor shall furnish and deliver to the Engineer, prior to the fifty percent completion point of construction, and no later than thirty (30) days prior to operator training, ten (10) complete sets of instructions, technical bulletins, and any other printed matter such as diagrams, prints or drawings, containing full information required for the proper operation, maintenance, and repair of the equipment. As a minimum, the following shall be included in this submittal:
  - 1. Operating Instructions
  - 2. Troubleshooting Information
  - 3. Maintenance Schedule(s)
  - 4. Lubrication Schedule
  - 5. Location of Service Centers
  - 6. Parts Diagram and List
  - 7. Spare Parts List (spare parts furnished shall be defined)
  - 8. Special Tools List
  - 9. Installation Instructions
  - 10. Assembly & Erection Drawings
  - 11. Dimensional Drawings

12. Wiring Diagram(s)

13. Storage Instructions

- C. These requirements are a prerequisite to the operation and acceptance of equipment. Each set of instructions shall be bound together in appropriate three-ring binders. A detailed Table of Contents shall be provided for each set. Written operation and maintenance instructions shall be required for all equipment items supplied for this project. The amount of detail shall be commensurate with the complexity of the equipment item. Submittal shall be made for all mechanical and electrical equipment included but not limited to pumps, valves, gates, etc.
- D. Information not applicable to the specific piece of equipment installed on this project shall be struck from the submission. Information provided shall include a source of replacement parts and names of service representatives, including address and telephone number.
- E. Extensive pictorial cuts of equipment are required for operator reference in servicing.
- F. When written instructions include shop drawings and other information previously reviewed by the Engineer, only those editions thereof which were accepted by the Engineer, and which accurately depict the equipment installed, shall be incorporated in the instructions.

#### 1.07 RECORD DRAWINGS

- A. Refer to Section 01720 for specific Record Drawing requirements.
- B. The Contractor shall keep and maintain, at the job site, one record set of Drawings. On these, it shall mark all project conditions, locations, configurations, and any other changes or deviations which may vary from the details represented on the original Contract Drawings, including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Drawings. As-Built furnished grade information shall be included on the record drawings. Said record drawings shall be supplemented by detailed sketches as necessary or directed to indicate, fully, the Work as actually constructed. These master record drawings of the Contractor's representation of as-built conditions, including all revisions made necessary by addenda and change orders shall be maintained up-to-date during the progress of Work.
- C. The record drawings shall be received on the 20th working day of every third month after the month in which the final notice to proceed is given as well as on completion of Work. Failure to maintain the record drawings up to date shall be grounds of withholding

monthly progress payments until such time as the record drawings are brought up to date.

- D. In the case of those drawings which depict the detail requirement for equipment to the assembled and wired in the factory, such as motor control centers and the like, the record drawing shall be updated by indicating those portions which are superseded by change order drawings or final shop drawings, and by including appropriate reference information describing the change orders by number and the shop drawings by manufacturer, drawing, and revision numbers.
- E. Record drawings shall be accessible to the Engineer at all times during the construction period.
- F. Upon substantial completion of the Work and prior to final acceptance, the Contractor shall finalize and deliver a complete set of final record drawings to the Engineer for transmittal to the City, conforming to the construction records of the Contractor. This set of drawings shall consist of corrected drawings showing the reported location of the Work. The information submitted by the Contractor and incorporated in the Final Record Drawings will be assumed to be correct, and the Engineer will not be responsible for the accuracy of such information, and for any errors or omissions which may appear on the Final Record Drawings as a result.
- G. The information submitted by the Contractor in the Final Record Drawings shall be certified by a land surveyor registered in the State of Florida. For clarity, Final Record Drawings needs to be redrawn and clearly labeled as "Record Drawings". Notations indicated in the drawings shall be legible and printed in black ink. No handwritten notes are allowed.
- H. Final payment will not be acted upon until the Engineer certifies the record drawings as required by the agencies having jurisdiction. Said up-to-date record drawings shall be in the form of a set of prints with carefully plotted information.
- I. All final record drawings shall be certified by the Engineer of Record. Such certification shall evidence that Engineer has reviewed the information, finds it in substantial accordance with the design; and where deviations from the design exist, that said deviations are not to the detriment of the system. Engineer's certification shall read as follows:

"I HEREBY NOTIFY THE OWNER OF THE COMPLETION OF CONSTRUCTION OF ALL THE COMPONENTS OF THE WATER, SEWER AND STORMWATER FACILITIES FOR THE ABOVE REFERENCED PROJECT AND CERTIFY THAT THEY HAVE BEEN CONSTRUCTED IN SUBSTANTIAL CONFORMANCE WITH THE PLANS AND SPECIFICATIONS PERMITTED BY THE AGENCIES HAVING JURISDICTION."

- J. The Contractor shall submit all electronic media files of the paving, grading, water, sewer and drainage plans, reports, other supporting information, and the final version of as-built drawings shall be submitted to the Engineer's office. The information provided shall contain an index file with a brief description of the electronic filing contents, and shall be labeled with project name, company name, and point of contact. Documents and spreadsheets shall be submitted in either MS Word, Word Perfect, Excel, Lotus, or another format approved by the Engineer. Drawings shall be submitted in AutoCAD, MicroStation, or another format approved by the Engineer.
- K. Final Record Drawings shall conform to Section 01720 and shall be submitted to the City, including, but not limited to the following information:
  - 1. Drawings shall be legibly marked to record actual construction.
  - 2. Drawings shall show actual location of all underground and above ground water and wastewater, stormwater piping and related appurtenances. All changes to piping location including horizontal and vertical locations of utilities and appurtenances shall be clearly shown and referenced to permanent surface improvements. Drawings shall also show actual installed pipe material, class, etc. Profile sheets shall be updated to include all field measurements and elevations taken during construction.
  - 3. Drawings shall clearly show all field changes of dimension and detail including changes made by field order or by change order.
  - 4. Drawings shall clearly show all details not on original contract drawings but constructed in the field. All equipment and piping relocation shall be clearly shown.
  - 5. Location of all manholes, hydrants, tees, reducers, crosses, valves, and valve boxes shall be shown. All tees, reducers, crosses, and valves shall be referenced from at least two (2) and preferably three (3) permanent points such as building corners and roadway intersections.
  - 6. Dimensions between all manholes shall be field verified and shown. The rim, inverts and grade elevations of all manholes shall be shown.

#### 1.08 WARRANTIES

- A. Original warranties, called for in the Contract Documents, shall be submitted to the City through the Engineer. When warranties are required, they shall be submitted prior to request for payment.
- B. When advance copies of warranties are requested, they shall be submitted with, and considered as shop drawings.

- C. The Contractor shall warrant to the City that all material and labor used in the construction are covered by his warrantee for a minimum of a one year period upon approval and acceptance by the City. The Contractor shall replace or repair defects at no cost to the City during the warrantee period. No visible or potential leakage shall be allowed during the warrantee period.

#### 1.09 CERTIFICATES

- A. Copies of certificates of compliance and test reports shall be submitted for requested items to the Engineer prior to request for payment.

#### 1.10 AUDIO-VISUAL PRECONSTRUCTION RECORD

- A. General: Prior to commencing work, the Contractor shall have a continuous color audio-video DVD recording taken of the entire Project, including existing areas that will be disturbed by the Contractor's operations, to serve as a record of preconstruction conditions. No construction shall begin prior to review and acceptance of the tapes covering the respective, affected construction area by the Engineer. The Engineer shall have the authority to reject all or any portion of the video DVD not conforming to the specifications and order that it be redone at no additional charge. The Contractor shall reschedule unacceptable coverage within five days after being notified. The Engineer shall designate those areas, if any, to be omitted from or added to the audio-video coverage. Audio-video recordings shall not be performed more than ninety days prior to construction in any area. All DVDs and written records shall become property of the City.
- B. Services: The Contractor shall engage the services of a professional electrographer. The color audio-video tapes shall be prepared by a responsible commercial firm known to be skilled and regularly engaged in the business of preconstruction color audio-video tape documentation. The electrographer shall furnish to the Engineer a list of all equipment to be used for the audio-video taping, i.e., manufacturer's name, model number, specifications and other pertinent information. Additional information to be furnished by the electrographer is the names and addresses of two references that the electrographer has performed color audio-video taping for on projects of a similar nature within the last twelve months.
- C. Audio-Video DVDs: Audio-video DVDs shall be new. The DVDs shall be compatible for with a standard player-receiver.
- D. Equipment: All equipment, accessories, materials and labor to perform this service shall be furnished by the Contractor.
  - 1. The total audio-video system shall reproduce bright, sharp, clear pictures with accurate colors and shall be free from distortion, tearing, rolls or any other form of imperfection. The audio portion of the recording shall reproduce the

commentary of the camera operator with proper volume and clarity, and be free from distortion and interruptions.

2. When conventional wheeled vehicles are used, the distance from the camera lens to the ground shall not be less than twelve feet. In some instances, audio-video tape coverage may be required in areas not accessible by conventional wheeled vehicles. Such coverage shall be obtained by walking or special conveyance acceptable to the Engineer.
  3. The color video camera used in the recording system shall have a horizontal resolution of 300 lines at center, a luminance signal to noise ratio of 45 dB and a minimum illumination requirement of twenty-five foot-candles.
- E. Recorded Information - Audio: Each tape shall begin with the current date, project name and municipality and be followed by the general location; i.e., process structure, or area, viewing side and direction of progress. The audio track shall consist of an original live recording. The recording shall contain the narrative commentary of the electrographer, recorded simultaneously with his fixed elevation video record of the zone of influence of construction.
- F. Recorded Information - Video: All video recordings must, by electronic means, display continuously and simultaneously, generated with the actual taping, transparent digital information to include the date and time of recording. The date information shall contain the month, day and year. The time information shall contain the hours, minutes, and seconds. Additional information shall be displayed periodically. Such information shall include, but not be limited to, project name, bid package number, process structure or area, and the viewing side. This transparent information shall appear on the extreme upper left hand third of the screen.
- G. Conditions for Taping: All taping shall be done during times of good visibility. No taping shall be done during precipitation, mist or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects of recordings and to produce bright, sharp video recordings of those subjects.
- H. Tape Coverage: Tape coverage shall include all surface features located within the zone of influence of construction supported by appropriate audio coverage. Such coverage shall include, but not be limited to, existing road, driveways, sidewalks, curbs, pavement, landscaping, fences, signs and interior and exterior of existing structures affected by the work and the exteriors of structures adjacent to the work, and any other on-site area that will be occupied or impacted by the Contractor or any of his subcontractors or suppliers within the area covered.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION



## SECTION 01400

### TESTING AND INSPECTION

#### PART 1 - GENERAL

- A. All testing and inspection will be in accordance with the General Conditions or the applicable sections included within each Division.
- B. The work or actions of the testing laboratory shall in no way relieve the Contractor of his obligations under the Contract. The laboratory testing work will include such inspections and testing required by the Contract Document, existing laws, codes, ordinances, etc. The testing laboratory will have no authority to change the requirements of the Contract Documents, nor perform or approve any of the Contractor's work.
- C. The Contractor shall allow the Engineer ample time and opportunity for testing materials and equipment to be used in the work. He shall advise the Engineer promptly upon placing orders for materials and equipment so that arrangements may be made, if desired, for inspection before shipment from the place of manufacture. The Contractor shall at all times furnish the Engineer and his representatives, facilities including labor, and allow proper time for inspecting and testing materials, equipment, and workmanship. The Contractor must anticipate that possible delays may be caused in the execution of his work due to the necessity of materials and equipment being inspected and accepted for use. The Contractor shall furnish, at his own expense, all samples of materials required by the Engineer for testing, and shall make his own arrangement for providing water, electric power, or fuel for the various inspections and tests of structures and equipment. As a minimum, 24-hours advance written notice shall be provided by the Contractor for rebar, structural and similar inspections by the Engineer. The amount of time required for advance written notice by the Contractor to the Engineer for other inspections depends upon other factors and shall be solely at the Engineer's discretion.
- D. The Contractor shall furnish the services of representatives of the manufacturers of certain equipment, as prescribed in other sections of the Specifications. The Contractor shall also place his orders for such equipment on the basis that, after the equipment has been tested prior to final acceptance of the work, the manufacturer will furnish to the City the certified statements that the equipment has been installed properly and is ready to be placed in functional operation. Tests and analyses required of equipment shall be paid for by the Contractor, unless specified otherwise in the section which covers a particular piece of equipment.
- E. The City will bear the cost of all additional tests, inspections, or investigations undertaken by the order of the Engineer for the purpose of determining conformance with the Contract Documents if such test, inspection, or investigations are not specifically required by the Contract Documents, and if conformance is ascertained thereby. Whenever nonconformance is determined by the Engineer as a result of such test, inspections, or investigations, the Contractor shall bear the full cost thereof or shall

reimburse the City for said cost. The cost of any additional tests and investigations, which are ordered by the Engineer to ascertain subsequent conformance with the Contract Documents, shall be borne by the Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01410

### CONTRACTOR'S HEALTH AND SAFETY PLAN

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. Scope:

1. This Section describes Contractor's responsibilities for a written site-specific health and safety plan (SSHP). Contractor shall conduct all construction activities in a safe manner so as not to result in:
  - a. Injuries to employees, Subcontractors, or other persons with an interest at or near the Site,
  - b. Employee exposures to health hazards above the occupational limits established by the Occupational Health and Safety Administration (OSHA), the American Conference of Governmental Industrial Hygienists (ACGIH), or the Nuclear Regulatory Commission (NRC),
  - c. Exposure of area residents to air contaminants above the levels established for general public exposure by the Environmental Protection Agency (EPA), NRC, or the State in which the Project is located,
  - d. Significant increases in the levels of contaminants in soil, water, or sediment near the Site, or
  - e. Violations of OSHA, or other Laws or Regulations.

- B. Any disregard of the provisions of the SSHP may, without limitation, be deemed just and sufficient reason for termination of Contractor's services for cause.

##### 1.02 QUALITY ASSURANCE

###### A. Qualifications:

1. Engage an industrial hygienist certified by the American Board of Industrial Hygiene or a safety professional certified by the Board of Certified Safety Professionals to prepare or supervise the preparation of the SSHP.
2. Submit qualifications along with SSHP.

- B. Regulatory Requirements: Contractor's health and safety practices shall follow the standards and guidelines established in the following:

1. 29 CFR 1904, OSHA, Record Keeping.
2. 29 CFR 1910, OSHA, General Industry Standards.

3. 29 CFR 1926, OSHA, Construction Industry Standards.
4. 29 CFR 1926.65, OSHA, Hazardous Waste Operations and Emergency Response.
5. 49 CFR 171.8, DOT, Hazardous Materials in Transport.
6. 40 CFR Parts 261.3, 264 and 265, EPA, Resource Conservation and Recovery Act.
7. 29 CFR 1910.146, OSHA, Permit-Required Confined Spaces.
8. 29 CFR 1926.1101, OSHA, Asbestos

#### 1.03 SUBMITTALS (Per Section 01300)

- A. Submit to Engineer the following:
  1. Contractor's SSHP.
  2. Qualifications of industrial hygienist or safety professional.
  3. Health and safety reports.
  4. Accident reports.

### PART 2 - PRODUCTS

#### 2.01 GENERAL PROVISIONS

- A. Submit SSHP to Engineer one week prior to the Preconstruction Conference, or 30 days prior to planned mobilization at the Site, whichever is sooner.
- B. The SSHP shall bear a stamp or specific written indication that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of the SSHP.
- C. Engineer will review and either accept or return for revision Contractor's SSHP in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and acceptance will be only to determine if the topics covered by the SSHP conform to the Contract Documents.
- D. Engineer's review and acceptance will not extend to means, methods, techniques, procedures of construction, or to whether the representations made in the SSHP comply with regulatory standards or standards of good practice.
- E. At the time of submittal, Contractor shall give Engineer specific written notice of variations, if any, that the SSHP may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the

submittal; and, in addition, by a specific notation made on each submittal to Engineer for review and acceptance of each such variation.

- F. No Work shall be performed on the Site until the written SSHP has been accepted by the Engineer.
- G. Notwithstanding any other provision of the Contract Documents, extensions to the Contract Times will not be granted if caused by undue delay by Contractor in developing or revising the SSHP.

## 2.02 WRITTEN HEALTH AND SAFETY PROGRAM

- A. The SSHP, which shall be kept on the Site, shall address the safety and health hazards of each phase of operations on the Site and include the requirements and procedures for employee protection. The SSHP as a minimum, shall address and include the following:
  - 1. The organizational structure of Contractor's organization.
  - 2. A comprehensive work plan.
  - 3. A safety and health risk or hazard analysis for each task and operation found in the work plan.
  - 4. Employee training assignments including copies of 40-hour, 24-hour Supervised Field Activities, 8-hour Supervisors, and 8-hour Refresher Training Certificates for all Contractors' employees assigned to the Project.
  - 5. Personal protective equipment to be used by employees for each of the tasks and operations being conducted. Respirator fit test certificates for all Contractor employees assigned to the Project.
  - 6. Medical Surveillance Requirements: Medical clearance certificates for all Contractors' employees assigned to the Project.
  - 7. Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment.
  - 8. Site control measures for purposes, including but not limited to:
    - a. Preventing trespassing,
    - b. Preventing unqualified or unprotected workers from entering restricted areas,
    - c. Preventing tracking of contaminants out of the Site,
    - d. Maintaining log of employees on and visitors to the Site,

- e. Delineating hot, cold and support zones,
  - f. Locating personnel and equipment decontamination zones, and
  - g. Communicating routes of escape and gathering points.
- 9. Decontamination procedures.
- 10. An emergency response plan for safe and effective responses to emergencies, including the necessary PPE and other equipment.
- 11. Confined space entry procedures (if applicable).
- 12. A spill containment program.
- B. Organizational Structure:
  - 1. The organizational structure part of the SSHP shall refer to or incorporate information on the specific chain of command and specify the overall responsibilities of supervisors and employees, and shall include, at a minimum, the following elements:
    - a. Designation of a general supervisor who has the responsibility and authority to direct all hazardous waste operations.
    - b. A Site safety and health supervisor who has the responsibility and authority to implement and modify the SSHP and verify compliance.
    - c. All other personnel needed for hazardous waste Site operations and emergency response and their general functions and responsibilities.
    - d. The lines of authority, responsibility, and communication.
  - 2. The organizational structure shall be reviewed and updated as necessary to reflect the current status of Site operations.
- C. Work Plan:
  - 1. The comprehensive work plan part of the SSHP shall refer to or incorporate information on the following:
    - a. The tasks and objectives of the Site operations and the logistics and resources required to achieve those tasks and objectives.
    - b. The anticipated activities as well as the Contractor's normal operating procedures.
    - c. The personnel and equipment requirements for implementing the work plan.

- D. The SSHP shall include procedures that will be used to ensure safe waste handling during the excavating, handling, loading, and transporting activities.

#### 2.03 ACCIDENT REPORTING AND INVESTIGATION

- A. Document all accidents resulting in bodily injury using OSHA 301 form.
- B. Submit copies of completed OSHA 301 forms to the Engineer weekly.
- C. Based upon the results of an accident investigation, make modifications to the SSHP by changing tasks or procedures to prevent a reoccurrence.
- D. Post a copy of Contractor's OSHA 300A report in a conspicuous place onsite.

#### 2.04 DAILY HEALTH AND SAFETY FIELD REPORTS

- A. Submit to Engineer daily health and safety field reports including, but not limited to, weather conditions, delays encountered in construction, and acknowledgment of deficiencies noted along with corrective actions taken on current and previous deficiencies. In addition, the daily health and safety air monitoring results, documentation of instrument calibration, new hazards encountered, and PPE utilized shall be included.
- B. The daily health and safety field reports shall include a description of problems, real or anticipated, encountered during the course of Work that should be brought to the attention of the Engineer and notification of deviations from planned Work shown in the previously submitted daily health and safety field report(s).

#### PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01500

### CONSTRUCTION CONSIDERATIONS

#### PART 1 - GENERAL

##### 1.01 HYDRAULIC UPLIFT ON STRUCTURES

- A. The Contractor shall be completely responsible for any structures, stormwater conflicting structure, tanks, wet wells, pipelines, manholes, foundations, cellars, or similar structures that may become buoyant during the construction operations due to the ground water, floods or buoyancy of piping caused due to the placement of flowable backfills before the structure is put into operation. Should there be any possibility of buoyancy of a pipeline or structure, the Contractor shall take the necessary steps to prevent its buoyancy. Damage to any structures due to floating or flooding shall be repaired, or the structures replaced at the Contractor's expense.

##### 1.02 WATER TIGHTNESS OF STRUCTURES

- A. General: It is the intent of these specifications that all concrete work, sealing work around built-in items and penetrations be performed as required to ensure that groundwater, rainwater, wastewater, chemical solutions or other process liquids in tanks, wet wells, channels, and containers will not leak into any buildings and/or equipment rooms, pipe galleries, habitable areas, or other generally dry areas.
  - 1. The required watertightness shall be achieved by quality concrete construction and proper sealing of all joints and penetrations.
  - 2. Each unit shall be tested separately, and the leakage tests shall be made prior to backfilling and before equipment is installed unless otherwise approved by the Engineer. Only potable water shall be used for the tests.
  - 3. The watertightness of buildings exclusive of the portions designed to contain liquids will consist of checking for leaks due to rain or groundwater infiltration.
  - 4. The Contractor shall provide at his own expense all labor, material, temporary bulkheads, pumps, water, measuring devices, etc., necessary to perform the required test.
- B. Built-in Items and Penetrations: All pipe sleeves, built-in items and penetrations shall be sealed as detailed and as required to ensure a continuous watertight seal.

##### 1.03 CUTTING AND PATCHING

- A. The Contractor shall perform all cutting and patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by such other work. The Contractor shall not endanger any work of others by cutting, excavating,



or otherwise altering their work and shall only cut or alter work with the written consent of the Engineer and of the other contractors whose work will be affected.

#### 1.04 ABANDONMENT AND SALVAGE OF EXISTING FACILITIES

- A. General: The scope of work requires the Contractor to interface with existing structures, and piping which will be abandoned or otherwise removed and/or relocated as part of the work. Prior to beginning any work associated with existing facilities to be abandoned, salvaged, or otherwise removed or relocated, the Contractor shall inform the City and the Engineer of his intent so that all arrangements can be made with the City for isolating pipelines (where possible) or otherwise removing existing facilities from service to the extent possible. The Contractor shall not proceed without written authorization from the City. The Contractor shall contact and coordinate accordingly with utilities companies prior to and during the execution of the relocation, removal, or abandonment of existing utilities structures. Existing utilities coordination is exclusively the responsibility of the Contractor.
- B. Pipelines: The Contractor shall abandon, salvage or otherwise remove existing pipelines or segments of existing pipelines shown to be abandoned in place, salvaged, or removed as part of the contract work. Unless otherwise indicated in the Contract Documents, all piping shown on the Drawings to be abandoned shall be abandoned in place. Pipe shown to be abandoned need only be removed a minimum three feet clear of new utilities to be installed. Abandon-in-place shall be defined as installing plugs, or other permanent closure, as reviewed and accepted by the City, on all termination's, open ends or ends of pipe designated as being cut, capped and anchored in an acceptable manner. The pipe will remain buried unless otherwise noted. All piping 6-inches in diameter and larger shall be grout filled when abandoned in place. Refer to Sections 02080 and 03600 for additional requirements.
- C. Piping indicated on the Drawings as being removed, or any piping to be abandoned which interferes with new structures or piping, shall be excavated, and removed using methods which will not disturb adjacent piping or other facilities. All pipe materials shall be subject to salvage by the City as defined below. Any remaining piping on both ends of pipe segments removed shall be abandoned in-place, per the above definition. After piping has been removed, the Contractor shall backfill the evacuated area in accordance with requirements set forth in other sections of these specifications.
- D. Equipment: The Contractor shall abandon, salvage, or otherwise remove existing equipment or other facilities as shown on the Contract Drawings or indicated herein. In all cases, the Contractor shall exercise caution when handling the existing equipment so as not to disturb or damage adjacent facilities. The Contractor shall make all repairs to adjacent facilities which may be damaged as a result of the Contractor's efforts in abandoning, salvaging or otherwise removing existing facilities, at no additional cost to the City.
- E. Salvage: The City may desire to salvage certain items of existing equipment which are to be dismantled and removed during the course of construction. Prior to removal of any existing equipment or piping from the site of work, the Contractor shall ascertain from

the City whether or not the particular item or items are to be salvaged. Items to be salvaged shall be either stockpiled on the site, in a location as designated by the City, or delivered by the Contractor to the City's designated facility. All other items of equipment shall be disposed of off-site by the Contractor at his own expense, in accordance with applicable laws, ordinances and regulations.

#### 1.05 DIMENSIONS OF EXISTING STRUCTURES

- A. Where the dimensions and locations of existing structures are of critical importance in the installation or connection of new work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any materials or equipment which is dependent on the correctness of such information.

#### 1.06 REHABILITATION

- A. Certain areas of existing structures, piping, conduits, and the like will be affected by work necessary to complete modifications under this Contract. The Contractor shall be responsible to rehabilitate those areas affected by its construction activities.
- B. Where new rectangular openings are to be installed in concrete or concrete masonry walls or floors, the Contractor shall score the edges of each opening (both sides of wall or elevated slab) by saw cutting clean straight lines to a minimum depth of one inch and then chipping out the concrete. Alternately, the opening can be formed by saw cutting completely through the slab or wall. Saw cuts deeper than one inch (or the depth of cover over existing reinforcing steel, whichever is less) shall not be allowed to extend beyond the limits of the opening. Corners shall be made square and true by a combination of core drilling, chipping, or grinding. All necessary precautions shall be taken during removal of concrete to prevent debris from falling and damaging adjacent equipment or piping. Saw cuts allowed to extend beyond the opening shall be repaired by filling with nonshrink grout. The concrete around any exposed reinforcement steel shall be chipped back and exposed reinforcement steel cut a minimum of 1-1/2 inches from the finished face of the new opening. The inside face of the new opening shall be grouted to fill any voids and cover the exposed aggregate and shall be trowel-finished to provide a plumb and square opening.
- C. Where new conduit or piping is to be installed through existing concrete walls, the Contractor shall accurately position the core-drill openings. Openings shall be adequately sized to allow alignment of piping or conduit and fittings without deflection and to provide adequate clearance for satisfactory packing in the annular space between the piping or conduit and the core drilling opening as shown on the Drawings.
- D. Where new piping is to be connected to existing piping, the existing piping shall be cut square and the ends properly prepared for the connection shown on the drawings. Any damage to the lining and coating of the existing piping shall be repaired by the Contractor.
- E. Where existing equipment, equipment pads and bases, piping, piping supports, electrical panels and devices, conduits, and associated appurtenances are removed, the Contractor shall rehabilitate the affected area such that little or no evidence of the previous installation remains. Opening in concrete floors, walls, and ceiling from piping, conduit,

and fastener penetrations shall be filled with nonshrink grout and finished to match the adjacent area. Concrete pads and bases for equipment and supports shall be removed by chipping away concrete and cutting any exposed reinforced steel and anchor bolts a minimum of 1-1/2 inches below finished grade. The area of concrete to be rehabilitated shall be scored by saw cutting clean, straight lines to a minimum depth of 1-1/2 inches, and all concrete within the scored lines removed to a minimum depth of 1-1/2 inches. The area within the scored lines shall be patched with nonshrink grout to match the adjacent grade and finish. Abandoned connections to piping and conduits shall be terminated with blind flanges, caps, and plugs suited for the material, type, and service of the pipe or conduit.

- F. Where existing structural steel members are removed or modified, the surface of the remaining existing steel members damaged by construction activities shall be repaired. The affected areas shall be surface prepared and coated in accordance with Section entitled "Painting."
- G. Disposal of Debris: All debris, materials, piping, and miscellaneous waste products from the work described in this section shall be removed from the project as soon as possible. They shall be disposed of in accordance with applicable federal, state, and local regulations. The Contractor is responsible for determining these regulations and shall bear all costs or retain any profit associated with disposal of these items.

#### 1.07 INSTALLATION OF EQUIPMENT

- A. Contractor shall have on hand sufficient personnel, proper equipment, and machinery of ample capacity to facilitate the work.
- B. Contractor shall be responsible for locating, aligning, and leveling all equipment and shall employ a licensed surveyor to set all lines and levels of equipment to the accuracy required.
- C. Complete manufacturers installation instructions, including permissible tolerances, shall be furnished in duplicate with each unit of equipment or set of identical units.
- D. All equipment shall be installed in accordance with the shop drawings; inclusive of manufacturers' specifications, drawings, and tolerances; under the direct supervision of the required manufacturers Engineer. No instructions shall be issued that are contrary to written specifications without prior written approval by the City's Engineer.
- E. Equipment shall be erected in a neat and workmanlike manner on the foundations at the locations and elevations shown on the drawings unless otherwise indicated by the Engineer during installation.

#### 1.08 SUPERVISION BY MANUFACTURER'S REPRESENTATIVES

- A. The Contractor shall provide the services of qualified equipment manufacturers technical representatives who shall adequately supervise the installation and testing of all equipment furnished under this Contract and instruct the Contractor's personnel and City's operating personnel in its maintenance and operation.

#### 1.09 EQUIPMENT MANUFACTURER'S CERTIFICATION

- A. As a condition precedent to acceptance of equipment installed and operating, the Contractor will provide the City with written certification, obtained from each company manufacturing equipment for the project that the equipment is installed and does operate in accordance with the specifications and manufacturers recommendations.

#### 1.10 SLEEVES AND OPENINGS

- A. The Contractor shall provide all openings, chases, etc., to fit his own work and that of any other subcontractors and contractors. All such openings or chases shown on the Contract Drawings, or reasonably implied thereby, or as confirmed or modified by shop, setting or erecting drawings approved by the Engineer, shall be provided by the Contractor.
- B. Where pipes or conduits are to pass through slabs or walls, or where equipment frames or supports are to be installed as integral part of an opening, the sleeves, opening, forms or frames shall be furnished by the installer of the pipes, conduits or equipment, but shall be placed by the Contractor.
- C. Where hanger inserts, anchor bolts and similar items are to be embedded in concrete as an integral part of a slab or wall, they shall be furnished by the installer of the pipe or other equipment requiring the hanger, etc. but shall be placed by the Contractor.
- D. When requested by the Contractor, the installer of the pipes, conduit, or equipment, including those contractors or subcontractors who require openings or chases in slabs and walls for passage of ducts, mounting or equipment, etc., shall furnish all necessary information, instructions, and materials to effect accurate installation of the required openings, chases, sleeves, frames, inserts, etc. When such items are secured in position, and just prior to construction of the surrounding slab or wall, the subcontractor or contractor for whom the items are installed shall ascertain the proper number, locations, and settings thereof; and the Contractor shall schedule his operations so as to provide a reasonable opportunity and time interval for such inspection.
- E. Any cost resulting from correction of defective, ill-timed, or mislocated work, or for subsequent work which becomes necessary because of omitted openings, chases, sleeves, frames, inserts, etc., shall be borne by the subcontractor or contractor responsible therefor. No contractor or subcontractor shall arbitrarily cut, drill, alter, damage, or otherwise endanger the work of another Contractor. In no case shall beams lintels, or other structural members be cut without the approval of the Engineer. The nature and extent of any corrective or additional work shall be subject to the approval of the Engineer following consultation with the affected parties.

#### 1.11 OBSTRUCTIONS

- A. All water pipes, storm drains, sanitary sewers, force mains, gas or other pipe, telephone or power cables or conduits and all other obstructions, whether shown, shall be temporarily supported across utility line excavations. The Contractor shall be responsible for any damage to any such pipes, conduits, or structures. Approximate locations of known water, sanitary, drainage, power and telephone installations along route of new

pipelines or in the vicinity of new work are shown but must be verified in the field by the Contractor. The Contractor shall uncover these pipes, ducts, cables, etc., carefully, by hand, prior to installing new lines. Any discrepancies or differences found shall be brought to the attention of the Engineer in order that necessary changes may be made to permit installation of new work. These conditions are supplemental to general requirements elsewhere in the Contract Documents.

#### 1.12 SITE CONDITIONS

- A. The Contractor acknowledges that he has investigated prior to bidding and satisfied himself as to the conditions affecting the Work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, canal stages, tides, water tables or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the Work. The Contractor further acknowledges that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, or any contiguous site, as well as from information presented by the Drawings and Specifications made a part of this Contract, or any other information made available to him prior to receipt of Bids. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the Work. The City assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the City.

#### 1.13 CONSTRUCTION DEWATERING

- A. All dewatering equipment such as pumps, air compressors, generators, etc. proposed for use during construction in residential areas shall be provided with noise enclosures suitable to meet the requirements of the City of Hollywood Noise Ordinance and/or Broward County Noise Ordinance, whichever is more stringent.
- B. Dewatering shall be done in accordance with Section 02140 - Dewatering.

#### 1.14 SUBSURFACE INVESTIGATIONS

- A. The Contractor shall be responsible for having determined to his satisfaction, prior to the submission of his bid, the nature and location of the work, the conformation of the ground, the character and quality of the substrata, the types and quantity of materials to be encountered, the nature of the groundwater condition, the character of equipment and facilities required preliminary to and during the performance of the work, the general and local conditions and all other matters which can in any way affect the work under this Contract. The prices established for the work to be done shall reflect all costs pertaining to the work. Any claims for extras based on the substrata or ground water table conditions will be disallowed.
- B. The Contractor further acknowledges that he assumes all risk contingent upon the nature of the subsurface conditions actually encountered by him in performing the work covered

by the Contract, even though such actual conditions may result in the Contractor performing more or less work than he originally anticipated.

- C. Existing utilities shall be protected in accordance with Section 01530 - Protection of Existing Facilities.

#### 1.15 DIFFERING SITE CONDITIONS

- A. The Contractor shall promptly and before such conditions are disturbed, notify the City in writing of: (1) subsurface or latent physical conditions at the site differing materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for this contract. The City will promptly investigate the conditions, and if he finds that such conditions do materially so differ and cause an increase or decrease in the Contractor cost of, or the time required for, performance of any part of the work under this contract, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the contract modified in writing accordingly.

#### 1.16 PROTECTION OF PROPERTY

- A. The Contractor shall protect all property that may be affected by his work or operations in accordance with Section 01530 - Protection of Existing Facilities. The location and extent of underground and covered facilities are not guaranteed.
- B. The Contractor is cautioned to proceed with care in order to prevent the undermining or damage to existing utilities including piping, power cable, utility poles, conduit, duct banks, fiber optic cable, gas, telephone and cable TV services, structures, piping, and other facilities.
- C. The Contractor shall take all measures necessary to protect new and existing mechanical equipment from dust and debris. All protective measures shall be furnished, installed, lighted, ventilated, maintained, and removed at the Contractor's own cost.
- D. When the City's water is being used, the supply source shall be protected against contamination in accordance with existing codes and regulations.
- E. In the event any of the Contractor's activities were to disrupt or endanger any facilities, he shall at his own expense make all necessary repairs or replacements necessary to correct the situation to the satisfaction of the Engineer. Such work shall progress continuously to completion on a 24-hour per day, seven workday basis. The Contractor shall be responsible for the services of repair crews on call 24 hours per day for emergencies that arise involving work under this Contract.

#### 1.17 WEATHER CONDITIONS

- A. Work that may be affected by inclement weather shall be suspended until proper conditions prevail. In the event of impending storms, the Contractor shall take necessary precautions to protect all work, materials, and equipment from exposure. The City

reserves the right, through the opinion of the Engineer, to order that additional protection measures over and beyond those proposed by the Contractor, be taken to safeguard all components of the project. The Contractor shall not claim any compensation for such precautionary measures so ordered, nor claim any compensation from the City for damage to the work from the elements of weather.

#### 1.18 FIRE PROTECTION

- A. The Contractor shall take all necessary precautions to prevent fires at or adjacent to the work, including his own buildings and trailers. Adequate fire extinguisher and hose line stations shall be provided throughout the work area.

#### 1.19 SAFETY AND HEALTH REQUIREMENTS

- A. The Contractor shall comply in every respect with all Federal, State, and local safety and health regulations. Copies of the Federal Regulations may be obtained from the U.S. Department of Labor, Occupational Safety and Health Administration.
- B. The Contractor shall provide all barricades and flashing warning lights or other traffic and warning devices necessary to warn pedestrians and area traffic. See Section 01570 – Traffic Regulations and Maintenance of Traffic.

#### PART 2 - PRODUCTS (NOT USED)

#### PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01520

### MAINTENANCE OF FACILITIES AND SEQUENCE OF CONSTRUCTION

#### PART 1 - GENERAL

##### 1.01 GENERAL

- A. The Contractor shall ensure the continuous operation of all existing sanitary sewer systems, potable water systems, and stormwater facilities during construction. In addition, the Contractor shall provide temporary traffic routing and coordinate his work so as to minimize impact to the utilities systems located in the area. In performing the work shown and specified, the Contractor shall plan and schedule his work as outlined in this Section.

##### 1.02 CONSTRUCTION SCHEDULE

- A. **The Construction Schedule shall be submitted by the Contractor and include phasing considerations, layout, sequencing and plans. Phase 1A utility work includes the Hollywood Beach Area from Balboa Street to Franklin Street between A1A and Surf Road and along Douglas Street and Surf Road. The Contractor is to phase the construction of the new water mains and obtain clearance such that the existing water mains can be placed out of service. In addition, the installation of a force main along Balboa Street and A1A from Lift Station E-09 to Franklin St. All phases are required to be completed within Contract specified calendar days for restoration efforts. For each phase that does not meet this requirement, liquidated damages will be assessed in the amount of the Contract specified amount per day. Phase 1A utility work will run concurrently with the power and communications work. Failure to meet any of the above defined construction/startup/acceptance completion dates shall subject the Contractor to pay damages as specified in these Supplementary General Conditions in Article 3. The total Contract specified calendar days to substantial completion will include all holidays, and, all rain days, etc. No time extensions will be granted for rain delays and holidays, etc.**

##### 1.03 USE OF FACILITIES BEFORE COMPLETION

- A. The City reserves the right to enter and use any portion of the constructed facilities before final completion of the whole work to be done under this Contract in accordance with Article 14-2, Partial Utilization of the General Conditions.



#### 1.04 CONNECTION OF EXISTING SYSTEMS

- A. All connections to existing systems shall be performed in such a manner that no damage and minimal interruption is caused to the existing installation. On completion of its installation, the Contractor shall complete the connection to the existing systems in a proper manner. Any damage caused to existing installations shall be repaired or replaced by the responsible Contractor at no additional cost to the City.

#### 1.05 COORDINATION WITH DEPARTMENT OF PUBLIC UTILITIES PERSONNEL

- A. Before commencing work involving removing or placing in operation existing or new facilities or tie-ins to existing facilities, the Contractor shall notify the City at least three (3) business days in advance in writing. The City shall be responsible for removing facilities from operation as deemed necessary.
- B. The Contractor shall, under no circumstances, interfere with wastewater treatment plant and existing potable water, sewer and stormwater facilities without the City's authorization, in writing, and supervision. The Contractor shall notify the City's representative in writing a minimum of three work days prior to each scheduled service request. This notification shall be provided on the City's standard form, or on an approved equivalent form completed in full by the Contractor.

#### 1.06 COORDINATION WITH PRIVATE PROPERTY OWNERS

- A. Prior to commencing with construction (including mobilization and maintenance of traffic) the Contractor shall distribute copies of the "Notice to Owners" (to be provided by the City) and "Right of Entry and Temporary Construction Easement" (to be provided by the City) to all property owners/tenants within the project area and shall obtain permission from property owners/tenants prior to working within their properties.

#### 1.07 GENERAL SEQUENCE OF CONSTRUCTION AND OPERATION REQUIREMENTS

- A. Work under the Contract shall be scheduled and performed in such a manner as to result in the least possible disruption to the public's use of roadways, driveways, parking areas, and utilities. Utilities shall include but not be limited to water, sewerage, irrigation, drainage structures, gas, electrical service, cable TV services, fiber optic cables, and telephone. Prior to commencing with the WORK, Contractor shall perform a location investigation of all existing underground and above ground utilities and facilities in accordance with Section 01530 entitled "Protection of Existing Facilities". Utilities that present potential conflict with the proposed piping shall be field verified with soft digging.
- B. The outlined sequence of construction does not include all items necessary to complete the work, but is intended to identify the sequence of critical events necessary to minimize any disruptions and to avoid any impact to continued collection system

service. It shall be understood by the Contractor that the critical events identified are not all inclusive and that additional items of work not shown may be required. The sequence of construction is a precedence requirement and does not attempt to schedule the Contractor's work. It is intended only to indicate which activities must precede other activities in order to minimize interference's and disruptions.

- C. All work by the Contractor that disrupts the normal utilities operations shall be shown on the Construction Schedule specified in Section 01300 and specifically scheduled with the City. Schedule notification shall consist of a written notice defining the work to be accomplished, the normal treatment plant that will be interrupted, the duration of the interruption, and the mitigating effort to be performed by the Contractor. The written notice shall be submitted to the City fourteen days in advance of the proposed work and the City will respond to the Contractor in writing within seven days of receipt of the notice regarding the acceptability of the proposed plan.
- D. At no time, the Contractor shall undertake closing off any pipelines, or opening valves, or take any other action which would affect the operation of the existing system, except as specifically required by the drawings and specifications, and until authorization is granted by the City or Engineer and after proper notification.
- E. Temporary installations required to complete a particular aspect of the work during the allowed time period shall be determined by the Contractor and implemented by the Contractor at no additional cost to the City. All such temporary installations shall be subject to the review and acceptance of the Engineer.
- F. Sequence of certain major events and identification of time constraints for removing existing facilities from active service and installation of new facilities are described below in paragraph 1.08. No phase of work (or tasks within a phase) shall preclude or be performed in parallel with a subsequent phase unless specifically defined so in these documents. In all cases, work in each phase shall be checked out and accepted for satisfactory use, subject to the Engineer's approval, prior to the Contractor proceeding to the next phase of construction.

#### 1.08 DETAILED SEQUENCE OF CONSTRUCTION AND OPERATION REQUIREMENTS

- A. A phasing plan is to be submitted by the Contractor including a phasing schedule, exhibit for the phasing areas and sequencing considerations (permitting, MOT, etc). The Contractor must obtain approval of the phasing plan prior to commencement of construction.
- B. Phase I - Mobilization / Site Preparation: Mobilize for work – Video working areas, set up staging and storage areas, obtain permits, develop and submit construction schedule, submit shop drawing schedule, survey, locate existing utilities and elevations

with soft digging, verify existing fittings to be connected, shop drawing submittals, and procure materials.

- C. Phase II – Construction of the Water and/or Wastewater Systems: The tasks included under this phase consist of installation of proposed improvements and sequencing effort for corridors that are congested or needed phased infrastructure and partial clearances as well as other infrastructure considerations for project completion.
- D. Phase III - Final Sitework and Closeout: Final pavement and asphalt overlay of the affected road sections, final restoration, final grading, sodding, miscellaneous work, demobilization, and related closeout activities as described in Section 01700 - Project Closeout.
- E. Construction Constraints: Contractor shall comply with the following constraints during construction and utilize constraints in determining a sequence of construction:
  - 1. Construction work during the installation of the proposed work shall be limited to the public right-of-ways. Homeowners shall have access to their driveways at all times.
  - 2. The excavation area shall be surrounded with barricades and obstructions illuminated with temporary lighting; furnished, installed, and maintained by the Contractor.
  - 3. Final restoration of roads, driveways, sidewalks, and all other paved areas shall be completed within twenty (20) business days after piping has been installed.
  - 4. Contractor is expected to work regular hours between the hours of 7:00 AM and 4:00 PM, Monday through Friday. Requests for approval to work during other than regular hours must be submitted to the Engineer and City at least 72 hours in advance of the period proposed for such overtime work and shall set forth the proposed schedule for overtime work to give ample time to arrange for personnel to be at the site of the Work, even for work required to occur by contract. Contractor shall pay for the charges for all overtime work. Such additional charges shall be a subsidiary obligation of Contractor, and no extra payment shall be made by City on account of such overtime work. The Contractor shall not violate the Hollywood Code of Noise Ordinance.
  - 5. Work hours as required by other jurisdictional authorities or by permit conditions must be followed at all times. The Contractor shall notify the authority if any deviations to the standard work hours are anticipated.
  - 6. The Contractor shall pay liquidated damages of \$500/DAY for not complying with any one of the above requirements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 COORDINATION WITH EXISTING UTILITIES AND OTHER AGENCIES

- A. The Contractor shall coordinate with Sunshine One-Call Notification at 811 a minimum of 48 business hours prior to any excavation for location of existing underground facilities.

3.02 COOPERATION

- A. The Contractor shall allow the City or its agents, and other project contractors or their agents, to enter facilities being constructed under this Contract for the purpose of constructing, installing, operating, maintaining, removing, repairing, altering or replacing such equipment pipes, sewers, conduits, manholes, wires, or other structures and appliances which may be required to be installed at or in the work. The Contractor shall cooperate with all the aforesaid parties and shall allow reasonable provisions for the prosecution of any other work by the City, or others, to be done in connection with his work, or in connection with normal use of the facilities.

END OF SECTION

## SECTION 01530

### PROTECTION OF EXISTING FACILITIES

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENT

- A. The Contractor shall protect all existing utilities and improvements not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the Contract Documents.
- B. The Contractor shall verify the exact locations and depths of all utilities shown and the Contractor shall make exploratory excavations of all utilities that may interfere with the Work. All such exploratory excavations shall be performed as soon as practicable after award of Contract and, in any event, a sufficient time in advance of construction to avoid possible delays to the Contractor's Work. When such exploratory excavations show the utility location as shown to be in error, the Contractor shall notify the City.
- C. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the utility and shall be at no additional cost to the City.

##### 1.02 RESTORATION OF ROADWAYS/ALLEYS

- A. General: All paved areas including asphaltic concrete berms cut or damaged during construction shall be replaced with similar materials and of equal thickness to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents or in the requirements of the agency issuing the permit. All temporary and permanent pavement shall conform to the requirements of the affected pavement. All pavements which are subject to partial removal shall be neatly saw cut in straight lines.
- B. Temporary Restoration: Temporary restoration includes repair to all driveways, sidewalks, and roadways. They shall be swept clean and be maintained free of dirt and dust. All areas disturbed by the construction activities shall be restored to proper grade, cleaned up, including the removal of debris, trash, and deleterious materials. All construction materials, supplies, or equipment, including piles of debris shall be removed from the area. All temporarily restored areas shall be maintained by the Contractor. These areas shall be kept clean and neat, free of dust and dirt, until final restoration operations are completed. The Contractor is responsible to utilize dust abatement operations in the temporarily restored areas as required, to the satisfaction of the Engineer.
- C. Temporary Resurfacing: Wherever required by the public authorities having jurisdiction, the Contractor shall place temporary surfacing promptly after backfilling and shall

maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration and improvements.

- D. Permanent Resurfacing: In order to obtain a satisfactory junction with adjacent surfaces, the Contractor shall saw cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with adjacent undisturbed pavement, unless otherwise shown on the drawings.
- E. Final Restoration: Final restoration shall include the completion of all required pavement replacement of roadways, driveways, curbs, gutters, sidewalks and other existing improvements disturbed by the construction: final grading, placement of sod, installation or replacement of any trees or shrubs, repair of irrigation systems, pavement markings, etc., all complete and finished, acceptable to the Engineer.

### 1.03 EXISTING UTILITIES AND IMPROVEMENTS

- A. General: The Contractor shall protect all underground utilities and other improvements which may be impaired during construction operations. It shall be the Contractor's responsibility to ascertain the actual location of all existing utilities and other improvements that will be encountered in its construction operations, and to see that such utilities or other improvements are adequately protected from damage due to such operations.
- B. Utilities to be Moved: In case it shall be necessary to move the property of any public utility or franchise holder, such utility company or franchise holder will, upon request of the Contractor, be notified by the City to move such property within a specified reasonable time. When utility lines that are to be removed are encountered within the area of operations, the Contractor shall notify the City a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.
- C. Where the proper completion of the Work requires the temporary or permanent removal and / or relocation of an existing utility or other improvement which is shown, the Contractor shall remove and temporarily replace or relocate such utility or improvement in a manner satisfactory to the City and the Owner of the utility/facility. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the Contractor in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal.
- D. City's Right of Access: The right is reserved to the City and to the Owners of public utilities and franchises to enter at any time upon any public street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the Work of this Contract.
- E. Underground Utilities Shown or Indicated: Existing utility lines that are shown or the locations of which are made known to the Contractor prior to excavation and that are to

be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired by the Contractor.

- F. Underground Utilities Not Shown or Indicated: In the event that the Contractor damages any existing utility lines that are identified in the field or the locations of which are not made known to the Contractor prior to excavation by the City and Sunshine One-Call Notification, a written report thereof shall be made immediately to the City. The Contractor shall make the repairs immediately under the provisions for changes and extra work contained in the General Conditions.
- G. Approval of Repairs: All repairs to a damaged improvement are subject to inspection and approval by an authorized representative of the City before being concealed by backfill or other Work.
- H. No fill, excavation material, construction generated debris or equipment shall obstruct water valves, gas meters or sewer manholes. Water, sewer and gas service shall be made accessible to repair or maintenance crews representing the City or a privately-owned utility company.
- I. Maintaining in Service: All oil and gasoline pipelines, power, and telephone or other communication cable ducts, gas and water mains, irrigation lines, reuse lines, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables encountered along the line of the Work shall remain continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the City are made with the owner of said utilities. The Contractor shall be responsible for and shall repair all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

#### 1.04 TREES WITHIN STREET RIGHTS-OF-WAY AND PROJECT LIMITS

- A. Trees are to be protected at all times. If any tree removal, trimming or relocation is required, the Contractor needs to coordinate with the Engineer, accordingly. Trees that are removed are required to be replaced at the Contractor's expense and in kind to the greatest extent possible. All required permits related to tree removal are the responsibility of the Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01550

### SITE ACCESS AND STORAGE

#### PART 1 - GENERAL

##### 1.01 SITE ACCESS

- A. The Contractor shall make its own investigation of the condition of available public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress to the site of the Work. It shall be the Contractor's responsibility to construct and maintain any haul roads required for its construction operations.
- B. The Contractor will be responsible for monitoring the main gate for its personnel, equipment, and material deliveries.

##### 1.02 STORAGE

- A. Any equipment and materials stored shall be in accordance with the manufacturer's recommendations and as indicated by the City.
- B. Responsibility for protection and safekeeping of equipment and materials will be solely that of the Contractor, and no claim shall be made against the City by reason of any act of an employee or trespasser. Should an occasion arise necessitating access to an area occupied by stored equipment and/or materials, the Contractor shall immediately move them.
- C. If the Contractor requires staging and storage areas, the Contractor shall obtain such areas from off site sources at no additional cost to the City.
- D. Upon completion of the Contract, the Contractor shall remove from the storage and work areas all their equipment, temporary fencing, surplus materials, rubbish, etc., and restore the area to its original or better conditions.

#### PART 2 - PRODUCTS (NOT USED)

#### PART 3 - EXECUTION (NOT USED)

END OF SECTION



## SECTION 01560

### SPECIAL CONTROLS

#### PART 1 - GENERAL

##### 1.01 CHEMICALS

- A. All chemicals used during project construction or furnished for testing of project operation, whether herbicide, pesticide, disinfectant, polymer, reactant of other classification, will be required to show approval of either EPA or HUD. The handling, use, storage and disposal of such materials, containers or residues shall be in strict conformance with manufacturer and/or Contractor's secured storage. Copies of antidote literature and a supply of antidotes shall be kept at the job site office.

##### 1.02 DUST

- A. During all work for this Contract, the Contractor shall by the application of water and/or calcium chloride or other means, approved by the Engineer, eliminate dust annoyance to adjacent property, business establishments and the plant site in accordance with Article 7.21, Dust Control, of the General Conditions. The Contractor shall take all protective measures, to the satisfaction of the Engineer, necessary to ensure that dust and debris does not enter any of the mechanical or electrical equipment. The Contractor shall be responsible for the cleanup of existing buildings, equipment, controls, etc., which have become soiled due to the lack of proper dust control as determined by the Engineer. The Contractor shall provide daily application of water to all unpaved areas designated by the Engineer in the field and to the satisfaction of the Engineer in the field.

##### 1.03 NOISE

- A. Noise resulting from the Contractor's work shall not violate the Hollywood Code of Ordinance Chapter 100, with specific note to the restrictions of paragraph 100.05 or exceed the noise levels and other requirements stated in the Broward County Chapter 27 Pollution Control, relating to noise abatement in Broward County. The Contractor shall be responsible for curtailing noise resulting from all operations, and upon written notification from the Engineer or the noise control officers, make any repairs, replacements, adjustments, additions and furnish mufflers or other noise attenuation devices when necessary to fulfill requirements.

##### 1.04 EROSION ABATEMENT AND WATER POLLUTION

- A. It is imperative that the Contractor's dewatering operations not contaminate or disturb the environment or properties adjacent to the Work. The Contractor, shall, therefore, schedule and control his operations to confine all runoff water from disturbed surfaces, water from dewatering and/or from excavation below the ground water table operations that becomes contaminated with lime silt, muck and other deleterious matter, fuels, oils, bitumens, calcium chloride, chemicals and other polluting materials.

- B. The Contractor shall construct temporary stilling basin(s) of adequate size and provide all necessary temporary materials, operations and controls including, but not limited to, filters, coagulants, screens, and other means necessary to attain the required discharge water quality.
- C. The Contractor shall be responsible for providing, operating, and maintaining materials and equipment used for conveying the clear water to the point of discharge. All pollution prevention procedures, materials, equipment, and related items shall be operated and maintained until such time as the dewatering operation is discontinued. Upon the removal of the materials, equipment, and related items the Contractor shall restore the area to the condition prior to his commencing work.

#### 1.05 HURRICANE AND STORM WARNINGS

- A. As the schedule for this project coincides, in part, with the recognized South Florida hurricane season, the Contractor's attention is drawn to the possibility of hurricane conditions, or severe storm conditions, occurring at the site during the course of Contract work.
- B. Within 30-days of the date of Notice-to-Proceed, the Contractor shall submit to the Engineer and Owner a Hurricane Preparedness Plan. The plan should outline the necessary measures which the Contractor proposes to perform at no additional cost to the Owner in case of a hurricane warning.
- C. In the event of inclement weather, or whenever the Engineer shall direct, the Contractor shall, and will cause Sub-Contractors to protect carefully the Work and materials against damage or injury by reasons of failure on the part of the Contractor to so protect the Work. Such Work and materials so damaged shall be removed and replaced at the expense of the Contractor.
  - 1. Hurricane Watch: Upon designation of a hurricane watch, Contractor shall be responsible for storing all loose supplies and equipment on the job site that may pose a danger. In addition, the Contractor shall remove all bulkheads and plugs in pipelines that would impede drainage in the case of flooding. Structures that may be in danger of floatation shall be flooded. The Contractor shall also cooperate with City personnel in protecting other structures at the site.
  - 2. Hurricane Warning: No mobile "temporary facility" under the control of the City of Hollywood, or on City property, shall be staffed during a hurricane warning. Contractor facilities meeting these criteria shall comply.
- D. The Contractor is advised to take all necessary precautions to protect his equipment by moving it to higher ground if in an area subject to flooding. Known areas of Hollywood that would be subject to flooding from storm tides include, but are not limited to:

Hollywood Blvd.  
A1A  
US Highway 1

North Lake Area  
Sheridan Street  
46<sup>th</sup> Avenue

South Lake Area  
Dania Beach Blvd.  
Hallandale Beach Blvd.

#### 1.06 PESTS AND RODENTS

- A. The Contractor shall be responsible for maintaining the jobsite free from litter, rubbish and garbage and shall provide containers for the disposal of garbage and other materials that attract and are breeding places for pests and rodents. The Contractor shall provide the services of an exterminator to inspect the jobsite on a periodic basis and to provide service as required to control pests and rodents, as applicable and at no cost to the city.

#### 1.07 PERIODIC CLEAN-UP; BASIC SITE RESTORATION

- A. During construction, the Contractor shall regularly remove from the site all accumulated debris and surplus materials of any kind which result from his operations, or whenever the accumulation in excess of one truck load. Unused equipment and tools shall be stored at the Contractor's yard or base of operations for the project.
- B. When the work involves installation of sewers, drains, water mains, manholes, underground structures, or other disturbance of existing features in or across streets, rights-of-way, easements, or private property, the Contractor shall (as the work progresses) promptly backfill, compact, grade and otherwise restore the disturbed area to a basic condition which will permit resumption of pedestrian or vehicular traffic and any other critical activity or function consistent with the original use of the land. Unsightly mounds of earth, large stones, tree roots, boulders, and debris shall be removed so that the site presents a neat appearance.
- C. The Contractor shall perform the clean-up work on a regular basis and as frequently as ordered by the Engineer. Basic site restoration in a particular area shall be accomplished immediately following the installation or completion of the required facilities in that area. Furthermore, such work shall also be accomplished, when ordered by the Engineer, if partially completed facilities must remain incomplete for some time period due to unforeseen circumstances.
- D. Upon failure of the Contractor to perform periodic clean-up and basic restoration of the site to the Engineer's satisfaction, the Engineer may, upon five (5) days prior written notice to the Contractor, employ such labor and equipment as he deems necessary for the purpose, and all costs resulting therefrom shall be charged to the Contractor and deducted from the amounts of money that may be due him.

#### 1.08 SECURITY

- A. The Contractor shall care for and protect against loss or damage of all material to be incorporated in the construction for the duration of the Contract and shall repair or replace damaged or lost materials and damage to structures.
- B. The Contractor shall be responsible for providing and maintaining temporary fencing and gates and the daily securing of temporary fencing and gates used for construction purposes for the duration of the project.

- C. The Contractor shall strictly comply with working hours on the project site. Prior to any work outside of the standard working hours, the Contractor shall request the City's approval via written request (at least 8 hours in advance). The written request shall clearly define the work to be performed, the names of the employees, their employer and their trade and the hours and days during which the work is planned. Other jurisdictions requiring notification or as part of a permit condition must also be coordinated with and notified by the Contractor prior to commencement for all work hours.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01570

### TRAFFIC REGULATIONS AND MAINTENANCE OF TRAFFIC

#### PART 1 - GENERAL

##### 1.01 TRAFFIC CONTROL

- A. Contractor shall obey all traffic laws and comply with all the requirements, rules and regulations of the State of Florida Department of Transportation (FDOT), the City of Hollywood, Broward County and other local authorities having jurisdiction, to maintain adequate warning signs, lights, barriers, etc., for the protection of vehicular traffic and pedestrian traffic on public roadways and within the project corridor.
- B. The Contractor shall maintain traffic and protect the public from all damage to persons and property within the Contract Limits, in accordance with the Contract Documents and all applicable state, city and local regulations. The Contractor shall conduct its construction operations so as to maintain and protect access, for vehicular and pedestrian traffic, to and from all properties and business establishments adjoining or adjacent to those streets affected by his operations, and to subject the public to a minimum of delay and inconvenience. Suitable signs, barricades, railing, etc. shall be erected and the work outlined by adequate lighting at night. Danger lights shall be provided as required. Watchmen, flagmen, and crossing guards shall be provided as may be necessary for the protection of traffic. Traffic Control and Maintenance of traffic during construction shall be included in the Contractor's bid and no additional payment shall be requested to the City for these activities
- C. For the protection of vehicular and pedestrian traffic in public or private streets and alleyways, the Contractor shall provide, place, and maintain all necessary barricades, traffic cones, warning signs, lights, and other safety devices in accordance with the requirements of the "Manual of Uniform Traffic Control Devices (MUTCD), published by U.S. Department of Transportation, Federal Highway Administration (ANSI D6.1).
- D. The Contractor shall submit a Maintenance of Traffic (MOT) Plan for Engineer and/or City approval at least 60 days prior to construction work. The plan shall be signed and sealed by a registered PE in the state of Florida. All MOT submittals must be done by the Contractor in advance of the work effort such that approvals may be obtained the project schedule kept on track.
- E. All MOT provided by the Contractor must take into consideration the required project phasing, maintaining, or adjusting MOT as necessary, all permit submittal requirements, permit approvals and permit fees from all jurisdictional agencies having authority over the ROW limits.
- F. Prior to performing any work within or abutting the State rights-of-way, the Contractor shall submit a Maintenance of Traffic (MOT) Plan to Florida Department of Transportation (FDOT) for approval as required by the FDOT Utility Permit. The plan shall be signed and sealed by a registered PE in the state of Florida.

- G. All signs, signals, and barricades shall conform to the requirements of FDOT.
- H. All dirt spilled from the Contractor's trucks on existing pavements shall be removed by the Contractor immediately and whenever in the opinion of the City the accumulation is sufficient to cause the formation of mud, dust, interference with traffic or create a traffic hazard.
- I. Areas designated by the Broward County Traffic Engineering Division as "Safe Walk Routes" shall adhere to the requirements of the Broward County Maintenance of Traffic School/Pedestrian.

#### 1.02 TEMPORARY CROSSINGS

- A. General: Wherever necessary or required for the convenience of the public or individual residents at street or highway crossings, private driveways, or elsewhere, the Contractor shall provide suitable temporary bridges over unfilled excavations, except in such cases as the Contractor shall secure the written consent of the individuals or authorities concerned to omit such temporary bridges, which written consent shall be delivered to the City prior to excavation. All such bridges shall be maintained in service until access is provided across the backfilled excavation. Temporary bridges for street and highway crossing shall conform to the requirements of the authority having jurisdiction in each case, and the Contractor shall adopt designs furnished by said authority for such bridges, or shall submit designs to said authority for approval, as may be required.
- B. Street Use: Nothing herein shall be construed to entitle the Contractor to the exclusive use of any public street, alleyway, or parking area during the performance of Work hereunder, and it shall so conduct its operations as not to interfere unnecessarily with the authorized work of utility companies or other agencies in such streets, alleyways, or parking areas. No street shall be closed to the public without first obtaining permission of the City and proper governmental authority. Where excavation is being performed in primary streets or highways, one lane in each direction shall always be kept open to traffic unless otherwise provided or shown and as approved by jurisdictional authorities. Toe boards shall be provided to retain excavated material if required by the City or the agency having jurisdiction over the street or highway. Fire hydrants on or adjacent to the Work shall always be kept accessible to fire-fighting equipment. Temporary provisions shall be made by the Contractor to assure the use of sidewalks and the proper functioning of all gutters, sewer inlets, and other drainage facilities.
- C. The Contractor shall take all necessary precautions for the protection of the Work and the safety of the public. All barricades and obstructions shall be illuminated at night, and all lights shall be kept burning from sunset until sunrise. The Contractor shall station such guards or flaggers and shall conform to such special safety regulations relating to traffic control as may be required by the public authorities within their respective jurisdictions. All signs, signals, and barricades shall conform to the requirements of FDOT.
- D. The Contractor shall remove traffic control devices when no longer needed, repair all damage caused by installation of the devices, and shall remove post settings and backfill the resulting holes to match grade.

- E. Temporary Street Closure: If closure of any street is required during construction, a formal application for a street closure shall be made to the authority having jurisdiction at least 30 days prior to the required street closure in order to determine necessary sign and detour requirements. Detour signs shall be provided, installed prior to street closure, and removed after construction by the Contractor.
- F. Temporary Driveway Closure: The Contractor shall notify the City or occupant (if not owner-occupied) of closure of driveways to be closed more than one eight-hour workday, at least three (3) working days prior to the closure. The Contractor shall minimize the inconvenience and minimize the time that the driveways will be closed. The Contractor shall fully explain to the owner/occupant how long the work will take and when closure is to start.
- G. Temporary Bridges: Whenever necessary, the Contractor shall provide suitable temporary bridges or steel plates over unfilled excavations, except in such cases as the Contractor shall secure the written consent of the individuals or authorities concerned to omit such temporary bridges or steel plates, which written consent shall be delivered to the Engineer prior to excavation. All such bridges or steel plates shall be maintained in service until access is provided across the backfilled excavation. Temporary bridges or steel plates for street and highway crossing shall conform to the requirements of the authority having jurisdiction in each case, and the Contractor shall adopt designs furnished by said authority for such bridges or steel plates, or shall submit designs to said authority for approval, as may be required.

#### 1.03 CONTRACTOR PARKING

- A. The Contractor shall obtain parking for all personnel vehicles as required.

#### PART 2 - PRODUCTS (NOT USED)

#### PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01600

### EQUIPMENT AND MATERIALS

#### PART 1 - GENERAL

##### 1.01 GENERAL

- A. All equipment, materials, instruments, or devices incorporated in this project shall be new and unused, unless indicated otherwise in the Contract Documents.
- B. Equipment and materials to be incorporated in the work shall be delivered sufficiently in advance of their installation and use to prevent delay in the execution of the work, and they shall be delivered as nearly as feasible in the order required for executing the work.
- C. The Contractor shall protect all equipment and materials from deterioration and damage. The equipment and materials shall be handled and stored by the manufacturer, fabricator Contractor and Contractor before, during, and after shipment to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, damage or theft of any kind whatsoever. Any equipment exhibiting any of the above, shall be removed and replaced at the Contractor's expense for both labor and materials.

##### 1.02 STORAGE

- A. The Contractor shall store its equipment and materials at their site in accordance with the manufacturer's recommendations and as directed by the Engineer in the field, Section 01550 Site Access and Storage. No storage area will be provided by City.

##### 1.03 HANDLING AND MAINTENANCE

- A. The manufacturer's storage instructions shall be carefully followed, and any deviations shall be approved by the manufacturer in writing with a copy to the Engineer. Equipment with moving parts shall be rotated per the manufacturer's recommendations while in storage and during the period between installation and acceptance.
- B. All equipment shall be stored fully lubricated unless otherwise instructed by the manufacturer. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. New lubricants shall be put into the equipment at the time of acceptance.
- C. Equipment with electric motors having space heaters shall have the space heaters energized unless stored in a temperature and humidity-controlled building. Space heaters shall be energized at the time of installation and maintained until acceptance of the equipment.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION



## SECTION 01700

### PROJECT CLOSEOUT

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: Comply with requirements stated in Conditions of the Contract and in Specifications for administrative procedures in closing out the Work.

##### 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.
  - 2. Project Record Documents, including the signed and sealed Project Record Survey, are complete and have been submitted and reviewed to the requirements of Section 01720. Additionally, the Project Record Documents must be approved by the Engineer and the City prior to deeming the project Substantially Complete.
  - 3. All areas to be used and occupied are safe, operable in automatic and complete.
  - 4. All painting, finishes, fencing, cleanup, final grading, grassing, planting, sidewalk construction, paving and restoration efforts shall have been completed and are ready for inspection.
  - 5. The water and sewer mains are installed and connected to the existing system.
  - 6. All the following related tests/inspections and Florida Department of Environmental Protection permit clearances are complete and approved.
    - a. Water distribution system:
      - 1) backfill density tests
      - 2) hydrostatic pressure test
      - 3) bacteriological test
      - 4) "Clearance for Use" Letter by FDEP
    - b. Sewage collection system:
      - 1) gravity main backfill density tests

- 2) manhole backfill density test submittal
  - 3) gravity main low-air pressure test
  - 4) gravity main lamp inspection
  - 5) manhole inspection
  - 6) "Clearance for Use" Letter by FDEP
7. All deficiencies noted on inspection reports or nonconformances are corrected or the correction plan approved.
  8. Until the Certificate of Substantial Completion is fully executed, the project shall not be deemed substantially complete.
- 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 request an inspection.
  2. A punch list 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 punch list with the Engineer's approval.)
- C. Within a reasonable time after receipt of such notice, the Engineer will inspect 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 therefor.
  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.
- E. When the Engineer finds that the Work is substantially complete, he will:
1. Schedule a walk-through of the project to include the Owner. Engineer shall determine the completeness of the punch list and readiness of the project for occupancy by the Owner.
  2. Prepare and deliver to Owner a tentative Certificate of Substantial Completion with the tentative punch list 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 punch list must be reinspected upon completion and any deficiencies found will be added to the punch list.

#### 1.03 PROJECT CLOSEOUT

- A. As construction of the project enters the final stages of completion, the Contractor shall, in accordance with the requirements set forth in the Contract Documents, attend to or have already completed the following items:
  1. Placed water or sewer lines into service once FDEP clearances have been obtained.
  2. Correcting or replacing defective work, including completion of items previously overlooked or work which remains incomplete, all as evidenced by the City's "Punch" lists.
  3. Make final submittals.
  4. Attend to any other items listed herein or brought to the Contractor's attention by the City.

#### 1.04 CLOSEOUT TIMETABLE

- A. The Contractor shall establish dates for equipment testing, acceptance periods, and on-site instructional periods (as required under the Contract). Such dates shall be established not less than one week prior to beginning any of the foregoing items, to allow the City, the Engineer, and their authorized representatives sufficient time to schedule attendance at such activities.

#### 1.05 FINAL SUBMITTALS

- A. Before the acceptance of the project major milestones for substantial completion, the Contractor shall submit to the Engineer (or to the City if indicated) certain records, certifications, etc., as listed in paragraph 1.02 A and as specified elsewhere in the Contract Documents. Missing, incomplete or unacceptable items, as determined by the Engineer or the City, shall indicate non-compliance with substantial completion major milestone dates. A partial list of such items appears below, but it shall be the Contractor's responsibility to submit any other items which are required in the Contract Documents:
  1. Written Test results of project components.
  2. Performance affidavits for equipment and materials.

3. Operation and Maintenance Manuals for equipment.
4. Record Drawings: Refer to Section 01720, Project Record Documents and Survey.
5. Written guarantees, where required.
6. Certificates of inspection and acceptance by local governing agencies having jurisdiction.
7. Releases from all parties who are entitled to claims against the subject project, property, or improvement pursuant to the provisions of law.

#### 1.06 PUNCH LISTS

- A. Final cleaning and repairing shall be scheduled upon completion of the project.
- B. The Engineer will make his final inspection whenever the Contractor has notified the Engineer that the work is ready for the inspection. Any work not found acceptable and requiring cleaning, repair and/or replacement will be noted on the "Punch" list. Work that has been inspected and accepted by the Engineer shall be maintained by the Contractor, until final acceptance of the entire project.
- C. Whenever the Contractor has completed the items on the punch list, he shall again notify the Engineer that it is ready for final inspection. This procedure will continue until the entire project is accepted by the Engineer. The "Final Payment" will not be processed until the entire project has been accepted by the Engineer and all of the requirements in paragraph 1.05 "Final Submittals" of this Section have been satisfied.

#### 1.07 MAINTENANCE AND GUARANTEE

- A. The Contractor shall comply with all maintenance and guarantee requirements of the Contract Documents.
- B. Replacement of earth fill or backfill, where it has settled below the required finish grade elevations, shall be considered as a part of such required repair work, and any repair or resurfacing constructed by the Contractor which becomes necessary by reason of such settlement shall likewise be considered as a part of such required repair work unless the Contractor shall have obtained a statement in writing from the affected private City or public agency releasing the City from further responsibility in connection with such repair or resurfacing.
- C. The Contractor shall make all repairs and replacements promptly upon receipt of written order from the City. If the Contractor fails to make such repairs or replacements promptly, the City reserves the right to do the Work and the Contractor and his surety shall be liable to the City for the cost thereof.

1.08 TOUCH-UP AND REPAIR

- A. The Contractor shall touch-up and repair damage to all field painted and factory finished equipment. Touch-up of equipment panels, etc., shall match as nearly as possible the original finish. If in the opinion of the Engineer the touch-up work is not satisfactory, the Contractor shall repaint the item. Contractor shall also furnish additional paint as defined in the contract documents.

1.09 FINAL CLEANUP

- A. The Contractor shall promptly remove from the vicinity of the completed Work, all rubbish, unused materials, concrete forms, construction equipment, and temporary structures and facilities used during construction. Final acceptance of the Work by the City will be withheld until the Contractor has satisfactorily complied with the foregoing requirements for final cleanup of the project site.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01720

### PROJECT RECORD DOCUMENTS AND SURVEY

#### PART 1 - GENERAL

##### 1.01 PURPOSE AND DESCRIPTION OF WORK

- A. The purpose of the Project Record Documents is to provide the Owner with factual information regarding all aspects of the Work, both concealed and visible, to enable future location, identification and modification of the Work without lengthy and expensive site measurement, investigation or examination.
- B. Provide professional surveying and mapping work required for the execution of the contract, including verification of existing survey data, construction layout, and production of the As-Built Drawings. This Work shall be performed by a Surveyor that is licensed by the State of Florida as a professional surveyor and mapper pursuant to Chapter 472, F.S.
- C. The location of the constructed improvements as depicted in the contract drawings is required. To verify the As-Built Drawing accuracies and to ensure the Work was constructed in conformance with the contract drawings, the following survey documents are required to be certified by the Surveyor.
  - 1. As-Built Asset Attribute Data Table (refer to Table 01720-2),
  - 2. Pipe Deflection Table (refer to Table 01720-3),
  - 3. Boundary Survey and Survey Map Report for any easements that have constructed pipes within and monuments that were replaced.

##### 1.02 DEFINITIONS

- A. Except where specific definitions are used within a specific section, the following terms, phrases, words, and their derivation shall have the meaning given herein when consistent with the context in which they are used. Words used in the present tense include the future tense, words in the plural number include the singular number and words in the singular number include the plural number. The word "shall" is mandatory, and the word "may" is permissive.
- B. **As-Built Drawings:** Drawings prepared by the Contractor's Surveyor shall depict the actual location of installed utilities for the completed WORK in a full-size hard copy and an electronic AutoCAD file (dwg) format.
- C. **Record Drawings:** Drawings, prepared and certified by the Owner's Consultant Engineer, shall be a compiled representation of the constructed project, a listing of the sources and the basis of information used in the preparation of the "record drawings", the constructed project meets the Engineer's design intent and note the material deviations

from the design documents, and the accuracy of the location information is based upon the Contractor's surveyor data supplied in the tables (As-Built Asset Attribute Data and Pipe Deflection).

- D. **Boundary Survey:** Boundary survey, map and report certified by a Surveyor shall be provided that meets the requirements of Chapter 61G17-6 'Minimum Technical Standards', FAC.
- E. **Surveyor:** Contractor's Surveyor that is licensed by the State of Florida as a professional surveyor and mapper pursuant to Chapter 472, F.S.
- F. **Survey Map Report:** As a minimum the Survey Map Report shall identify any corners that had to be reset, measurements and computations made, and accuracies obtained.

#### 1.03 QUALIFICATIONS OF THE SURVEYOR

- A. The Surveyor, who is proposed by the Contractor to provide services for the Project, is subject to the approval of the Owner. Prior to any services being performed, the Contractor shall submit the name and address of any proposed Surveyor and a written acknowledgement from the Surveyor stating that he has the hardware, software and adequate scope of services in his agreement with the Contractor to fully comply with the requirements of this specification. These submittals shall be provided to the Owner prior to Notice to Proceed. It is recommended that the Surveyor attend the Preconstruction meeting. Any Surveyor, who has not previously performed work for the Owner in the past, shall attend the Preconstruction meeting.

#### 1.04 RELATED REQUIREMENTS

- A. All General Conditions, Supplements to the General Conditions, and any Addenda issued by the Owner are a part of this Section in the same manner as if fully written herein, and shall govern the Work of this Section, except where more stringent articles or requirements are stipulated, then they shall govern this Section.
- B. The Contract Documents are complimentary and what is required by anyone shall be as binding as if required by all.
- C. Other requirements affecting Record Documents may appear in pertinent other sections of these specifications.

#### 1.05 QUALITY ASSURANCE

- A. Delegate the responsibility for maintenance of the Record Documents to one person on the Contractor's staff as approved by the Owner.
- B. Thoroughly coordinate changes within the Record Documents, making adequate and proper entries on each page of specifications and each sheet of drawings and other documents where such entry is required to show progress and changes properly.
- C. Make entries within 24-hours after receipt of information has occurred.

- D. Survey documents shall comply with the minimum technical standards of Chapter 61G17-6 of the Florida Administrative Code (FAC) and Table 01720-1 Minimum Survey Accuracies specified in, whichever are more stringent. Asset attribute data shall be signed, sealed and dated by the Surveyor. All coordinates shall be geographically registered in the Florida State Plan Coordinate System using the contract drawings control points for horizontal and vertical controls.

**Table 01720-1**

**Minimum Survey Accuracies**

Asset/Location	Horizontal Accuracy (feet)	Elevation Accuracy (feet)	Location: horizontal center and vertical top, unless otherwise specified
Benchmarks	N/A	0.01	Point
Horizontal Control	0.01	N/A	Point
Easements and Tracts	*	N/A	Survey Monuments
Civil Site, Topo and Foundation Drawings	0.1	0.01	All
Hydrants	0.01	N/A	Operating Nut
Blow off Valves	0.01	N/A	Valve Enclosure
Air Release Valves	0.01	N/A	Valve Enclosure
Master Meters	0.01	N/A	Register
Meter Box or Curb Stops if box does not exist	0.01	N/A	Top of Meter Box
Clean-out	0.01	N/A	Top of Clean-out
Pump Station	0.01	0.01	Top Center of Wet Well and Pipe Inverts
Manholes	0.01	0.1	Top Center of Cover
Manhole	N/A	0.01	Pipe Inverts
System Valves	0.01	0.1	Operating Nut and Valve Body



**Table 01720-1 (cont'd)**

**Minimum Survey Accuracies**

Asset/Location	Horizontal Accuracy (feet)	Elevation Accuracy (feet)	Location: horizontal center and vertical top, unless otherwise specified
Fittings & the end of the pipe	0.01	0.1	Top of Fitting and Ground
Piping at 100' max intervals	0.01	0.1	Top of Pipe and Ground
Restrained Pipe	0.01	N/A	Limits
Connections	0.01	0.1	Pipe Invert
Bore & Jack Casing	0.01	0.1	Top of Casing at Limits of Casing
Existing Utilities**	0.01	0.1	Conflicts

\* Shall conform to the requirements of the "Chapter 61G17-6, 'Minimum Technical Standards', FAC", for a boundary survey and shall be certified by the Surveyor.

\*\* Existing utilities including but not limited to water, wastewater, reclaimed water, storm, fiber optic cable, electric, gas and structures within the limits of construction.

**1.06 SUBMITTALS**

- A. Comply with pertinent provisions for the timely submittal requirements under this article and specification section.
- B. Prior to submitting a monthly payment application, the Contractor's progressive As-Built Drawings and As-Built Asset Attribute Data, and Pipe Deflection Tables shall be acceptable to the Owner.
- C. Progressive As-Built Drawings shall indicate the horizontal and vertical locations of all current constructed improvements with sufficient information and notes to easily determine if the improvements were constructed in conformance with the Contract Documents. The progressive As-Built Asset Attribute Data and Pipe Deflection Tables shall include a Surveyor's certified statement regarding the constructed improvements being within the specified accuracies or if not indicating the variances, as described in Table 01720-1 Minimum Survey Accuracies.
- D. Prior to submitting a request for final payment or the Owner issuing a Certificate of Completion for the Work, the Contractor shall submit the final Record Documents to the

Owner for approval. Retainage funds will be withheld at the Owner's discretion based on the quality and accuracy of the final Record Documents.

#### 1.07 RECORD DOCUMENTS AT SITE

- A. Maintain at the site and always available for Owner's use one record copy of:
  - 1. Construction Contract, Drawings, Specifications, General Conditions, Supplemental Conditions, Bid Proposal, Instruction to Bidders, Addenda, and all other Contract Documents.
  - 2. Change Orders, Verbal Orders, and other modifications to Contract.
  - 3. Written instructions by the Owner as well as correspondence related to Requests for Information (RFIs).
  - 4. Accepted Shop Drawings, Samples, product data, substitution and "or-equal" requests.
  - 5. Field test records, inspection certificates, manufacturer certificates and construction photographs.
  - 6. Progressive As-Built Drawings
  - 7. Current Surveyor's tables for the As-Built Assets Attribute Data, pipe deflection data, and gravity main data.
- B. Maintain the documents in an organized, clean, dry, legible condition and completely protected from deterioration and from loss and damage until completion of the Work, transfer of all record data to the final Record Documents and for submittal to the Owner.

### PART 2 - PRODUCTS

#### 2.01 AS-BUILT DRAWINGS

- A. Maintain the electronic As-Built Drawings to accurately record progress of Work and change orders throughout the duration of the Contract.
- B. Date all entries. Enter RFI No., Change Order No., etc. when applicable.
- C. Call attention to the entry by highlighting with a "cloud" drawn around the area affected.
- D. In the event of overlapping changes, use different colors for entries of the overlapping changes.

- E. Design callouts shall have a thin strike line through the design call-out and all As-Built information must be labeled (or abbreviated "AB") and be shown in a bolder text that is completely legible.
- F. Make entries in the pertinent other documents while coordinating with the Engineer and the Owner for validity.
- G. Entries shall consist of graphical representations, plan view and profiles, written comments, dimensions, State Plane Coordinates, details, and any other information as required to document field and other changes of the actual Work completed. As a minimum, make entries to also record:
  - 1. Depths of various elements of foundation in relation to finish floor datum and State Plane Coordinates and elevations.
  - 2. As-Built Asset\_Attribute Data Table shall be completed in the Drawings.
  - 3. When electrical boxes, or underground conduits and plumbing are involved as part of the Work, record true elevations and locations, dimensions between boxes.
  - 4. Installed pipe or other Work materials, class, pressure rating, diameter, size, specifications, etc. Similar information for other encountered underground utilities, not installed by Contractor, their owner and actual location if different than shown in the Contract Documents.
  - 5. Details, not on original contract Drawings, as needed to show the actual location of the Work completed in a manner that allows the Owner to find it in the future.
  - 6. The Contractor shall mark all arrangements of conduits, circuits, piping, ducts and similar items shown schematically on the construction documents and show on the As-Built Drawings the actual horizontal and vertical alignments and locations.
  - 7. Major architectural and structural changes including relocation of doors, windows, etc. Architectural schedule changes according to contractor's records and shop drawings.

## 2.02 RECORD DOCUMENTS

- A. A full size, two (2) hard copy set of the final Record Documents and shall include all of the documents described below under this subsection 2.02.
- B. The following documents shall be signed and sealed by the Surveyor:
  - 1. As-Built Asset Attribute Data Table (see Table 1720-2 for an example).

2. Survey and Survey Map Report for the location of constructed pipes within any easements and right-of-way. As a minimum the Survey Map Report shall identify or describe the locations where the pipe centerline was constructed within three feet of the easement or right-of-way boundary, where the pipe was constructed outside the easement or right-of-way boundary, any corners that had to be reset, measurements and computations made, pump station boundary issues, and accuracies obtained. Survey map report shall be dated after the Work within the right-of-ways or easements have been completed.
  3. Pipe Deflection Table (see Table 1720-3 for an example). *An electronic blank table will be supplied by the Owner.*
- C. Digital Set of the final Record Documents including but not limited to:
1. Scanned digital copies of the final As-Built Drawings.
  2. Electronic Survey documents electronically sealed by the Surveyor.
  3. Final Record Documents information.
  4. Digital As-Built Drawing in the Engineer's current version of AutoCAD file (dwg) format for the Contract Drawings, updated to match the final Record Drawing information.
- D. New Boundary Survey to re-establish easement corners, right-of-way monuments, or pump station site corners with monuments if destroyed by the Work.
- E. Scanned Documents: Scan the Survey Documents and other Record Documents reflecting changes from the Bid Documents.
- F. The scanned As-Built drawing sets shall be complete and include the title sheet, plan/profile sheets, cross-sections, and details. Each individual sheet contained in the printed set of the As-Built Drawings shall be included in the electronic drawings, with each sheet being converted into an individual tif (tagged image file). Then, the tif images shall be embedded into a single pdf (Adobe Acrobat) file representing the complete plan set. Review all Record Documents to ensure a complete record of the project.
- G. Provide an encompassing digital AutoCAD file that includes all the information of the As-Built Drawings and any other graphical information in the As-Built Drawings. It shall include the overall Work, utility system layout and associated parcel boundaries and easements. Feature point, line and polygon information for new or altered Work and all accompanying geodetic control and survey data shall be included. The surveyor's certified as-built asset attribute data shall be added to the As-Built Drawings and Surveyor shall electronically seal the data.

TABLE 1720-2

## Asset Attribute Data Form Examples

## General Information Worksheet

	A	B	C
1	<b>Date of submittal</b>	3/3/2009	
2			
3	<b>Collection Date</b>	3/3/2009	
4			
5	<b>Project Number</b>	123456	
6			
7	<b>Project Name</b>	ABC	
8			
9	<b>Contractor Name</b>	Joe Contractor	
10			
11	<b>Company</b>	Your Company	
12			

General Info / Hydrants / Valve / Manhole / Meter / Fitting / Cleanout / Pipes / Structures / Easements

## Hydrants Worksheet

	A	B	C	D	E	F	H	I
1	<b>ID Number</b>	<b>Utilities Asset Number</b>	<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>	<b>Service Type</b>		
2	1	H001	535896.7840	1491359.5830	99.78	Water		
3	2	H002	536062.0800	1491360.9250	99.20	Water		
4	3	H002	509643.9000	1481344.6000	99.20	Water		

General Info / Hydrants / Valve / Manhole / Meter / Fitting / Cleanout / Pipes / Structures / Easements

## Valves Worksheet

	B	C	D	E	F	G
1	<b>Utilities Asset Number</b>	<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>	<b>Valve Type</b>	<b>Service Type</b>
2	V001	535887.9950	1491394.7730	96.74	Gate	Water
3	V002	535884.7480	1491396.1010	91.27	Gate	Water
4	V003	535883.6870	1491393.4900	92.18	Gate	Water

General Info / Hydrants / Valve / Manhole / Meter / Fitting / Cleanout / Pipes / Structures / Easements

## Manhole Worksheet

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	<b>ID Number</b>	<b>Utilities Asset Number</b>	<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>	<b>Invert Elev N</b>	<b>Invert Elev NE</b>	<b>Invert Elev E</b>	<b>Invert Elev SE</b>	<b>Invert Elev S</b>	<b>Invert Elev SW</b>	<b>Invert Elev W</b>	<b>Invert Elev NW</b>	<b>Service Type</b>
2	15	15	535896.3040	1491144.0450	96.31	91.56	88.81			88.71		88.61		Water Reclamation
3	277	277	505962.0207	1474906.7832	92.76		86.83				86.95			Water Reclamation
4	278	278	506130.5461	1475093.6556	91.00				85.95		86.17		87.2	Water Reclamation
5	279	279	505993.3960	1475243.3448	92.36				88.8					Water Reclamation

General Info / Hydrants / Valve / Manhole / Meter / Fitting / Cleanout / Pipes / Structures / Easements / Lookup / Relation

## Meter Worksheet

	A	B	C	D	E	F	G
1	<b>ID Number</b>	<b>Utilities Asset Number</b>	<b>Easting</b>	<b>Northing</b>	<b>Elevation</b>	<b>Meter Type</b>	<b>Service Type</b>
2	7	7	535887.9950	1491394.7730	96.74	Flow	Water

General Info / Hydrants / Valve / Manhole / Meter / Fitting / Cleanout / Pipes / Structures / Easements

## Fitting Worksheet

	A	B	C	D	E	F	G	
1	ID Number	Utilities Asset Number	Easting	Northing	Elevation	Fitting Type	Service Type	
2	20008	F0001	538549.20	1475457.69	78.94	Tee	Water Reclamation	
3	20010	F0002	538544.73	1475457.74	78.94	Tee	Water Reclamation	
4	20013	F0003	538544.36	1475467.92	79.02	Tee	Water Reclamation	
◀ ▶ ▶ ▶ \ General Info \ Hydrants \ Valve \ Manhole \ Meter \ <b>Fitting</b> \ Cleanout \ Pipes \ Structures \ Easements \								

## Cleanout Worksheet

	A	B	C	D	E	F	H	
1	ID Number	Utilities Asset Number	Easting	Northing	Elevation	Service Type		
2	15	15	535898.3040	1491144.0450	96.31	Water Reclamation		
3	277	277	505962.0207	1474906.7832	92.76	Water Reclamation		
◀ ▶ ▶ ▶ \ General Info \ Hydrants \ Valve \ Manhole \ Meter \ Fitting \ <b>Cleanout</b> \ Pipes \ Structures \ Easements \								

## Pipes Worksheet

	A	B	C	D	E	F	G	H	I
1	ID Number	Utilities Asset Number	Easting	Northing	Elevation	W Pipe Type	WW Pipe Type	RW Pipe Type	Service Type
2	20001	P00001	1475448.92	538024.96	81.5	Distribution	Pressurized		Water Reclamation
3	20002	P00002	1475487.58	538055.74	79.74	Distribution	Pressurized		Water Reclamation
4	20004	P00003	1475470.75	538166.01	79.46	Distribution	Pressurized		Water Reclamation
◀ ▶ ▶ ▶ \ General Info \ Hydrants \ Valve \ Manhole \ Meter \ Fitting \ Cleanout \ <b>Pipes</b> \ Structures \ Easements \									

## Structures Worksheet

	A	B	C	D	E	F	G
1	ID Number	Utilities Asset Number	Easting	Northing	Elevation	Structure Type	Service Type
2	20	3980	535886.9150	1491144.3200	96.17	PumpStation	Water Reclamation
◀ ▶ ▶ ▶ \ General Info \ Hydrants \ Valve \ Manhole \ Meter \ Fitting \ Cleanout \ Pipes \ <b>Structures</b> \ Easements \							

## Easements Worksheet

	A	B	C	D	E	F	G
1	ID Number	Utilities Asset Number	Easting	Northing	Elevation		
2	1721	1721	468066.6800	1515018.8300			
3	1722	1722	468066.9400	1514983.8300			
4	1723	1723	468041.9400	1514983.6500			
5	1724	1724	468041.9400	1515018.6400			
◀ ▶ ▶ ▶ \ Hydrants \ Valve \ Manhole \ Meter \ Fitting \ Cleanout \ Pipes \ Structures \ <b>Easements</b> \							

**Note: Do not fill out Utilities Asset Number (grey) column.**

TABLE 01720-3

## PIPE DEFLECTION TABLE EXAMPLE

<b>Project:</b> <b>Contractor:</b> <b>Progress Mtg Date:</b> <b>Contract #</b> <b>Dwg Sheet #</b> <b>Utility Type</b> <b>Pipe Manufacturer</b> <b>Pipe size &amp; material</b> <b>PVC Manufacturer Deflection</b> <b>County Allowable Deflection</b> <b>Allowable Angle of Offset</b> <b>Allowable Radius of Curvature</b> <b>Laying Length of Pipe</b>					<b>FM</b>  National Pipe 16" PVC C905 6 inches 4.5 inches 1.5 degrees 764 feet 20 feet																																																																																																															
<table><tr><th rowspan="4">ID</th><th rowspan="4">Size and Type</th><th rowspan="4">Northing</th><th rowspan="4">Easting</th><th rowspan="4">Elev.</th><th colspan="7">Calculations Including Elevation (XYZ)</th></tr><tr><th>Distance between points AB</th><th>Distance between points BC</th><th>Distance between points AC</th><th>Total Deflection Ø'</th><th>Radius of Curve**</th><th>Average Offset Angle***</th><th>Average Offset****</th></tr><tr><th>Length AB</th><th>Length BC</th><th>Length AC</th><th>XYZ (w/ elevation)</th><th>XYZ (w/ elevation)</th><th>per laying length</th><th>per laying length</th></tr><tr><th>ft</th><th>ft</th><th>ft</th><th>degrees</th><th>ft</th><th>degrees</th><th>inches</th></tr><tr><td>14041</td><td>16" FM</td><td>1505131.50</td><td>468948.53</td><td>107.68</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr><tr><td>7000</td><td>16" FM</td><td>1505059.60</td><td>468932.08</td><td>108.15</td><td>73.76</td><td>38.93</td><td>112.66</td><td>5.48</td><td>1,178.35</td><td>0.97</td><td>4.07</td></tr><tr><td>2128</td><td>16" FM</td><td>1505022.11</td><td>468921.60</td><td>108.55</td><td>38.93</td><td>39.61</td><td>78.54</td><td>2.29</td><td>1,961.65</td><td>0.58</td><td>2.45</td></tr><tr><td>2127</td><td>16" FM</td><td>1504983.85</td><td>468911.35</td><td>108.29</td><td>39.61</td><td>38.35</td><td>77.96</td><td>1.78</td><td>2,505.50</td><td>0.46</td><td>1.92</td></tr><tr><td>2126</td><td>16" FM</td><td>1504946.67</td><td>468901.96</td><td>107.81</td><td>38.35</td><td>39.13</td><td>77.42</td><td>8.79</td><td>505.16</td><td>2.27</td><td>9.51</td></tr><tr><td>2125</td><td>16" FM</td><td>1504908.11</td><td>468895.31</td><td>107.48</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>												ID	Size and Type	Northing	Easting	Elev.	Calculations Including Elevation (XYZ)							Distance between points AB	Distance between points BC	Distance between points AC	Total Deflection Ø'	Radius of Curve**	Average Offset Angle***	Average Offset****	Length AB	Length BC	Length AC	XYZ (w/ elevation)	XYZ (w/ elevation)	per laying length	per laying length	ft	ft	ft	degrees	ft	degrees	inches	14041	16" FM	1505131.50	468948.53	107.68	-	-	-	-	-	-	-	7000	16" FM	1505059.60	468932.08	108.15	73.76	38.93	112.66	5.48	1,178.35	0.97	4.07	2128	16" FM	1505022.11	468921.60	108.55	38.93	39.61	78.54	2.29	1,961.65	0.58	2.45	2127	16" FM	1504983.85	468911.35	108.29	39.61	38.35	77.96	1.78	2,505.50	0.46	1.92	2126	16" FM	1504946.67	468901.96	107.81	38.35	39.13	77.42	8.79	505.16	2.27	9.51	2125	16" FM	1504908.11	468895.31	107.48							
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Data that has been inputted					Values in yellow are over spec																																																																																																															

\*Uses law of cosines to determine angle ABC and Ø.  
 $\text{angle } ABC = \arccos((AB^2 + BC^2 - AC^2) / (2 * AB * BC))$   
 $180 - \text{angle } ABC = \text{angle } \delta$   
Calculate the total deflection Ø.  
to the outer point (A or C) is equal in angle to  
the approach from the next point along the

\*\* Uses law of sines, using the chord length AC and radius R.  
Since  $\sin((\delta/2) * (\pi/180)) = (\text{Chord}/2) / R$  and length AC = Chord  
 $R = AC / (2 * \sin((\delta/2) * (\pi/180)))$   
This calculation assumes an average radius over the bend between three points.

\*\*\* Adds the lengths of AB + BC / 20ft to get an approximate number of bends over the span.  
This value is divided by the total deflection  
angle to calculate the average bend angle of  
This assumes that the bend angle is consistent across the entire length.

\*\*\*\* Uses average offset angle and laying length of pipe.

PART 3 - EXECUTION

3.01 SURVEY FIELD WORK

- A. Locate, reference, and preserve existing horizontal and vertical control points and property corners shown on the Drawings prior to starting any construction Work. If the Surveyor performing the Work discovers any discrepancies that will affect the Project, the Contractor must immediately report these findings to the Owner. All survey work shall meet the requirements as defined in Florida Administrative Code 61G17-6. Reference and preserve all survey points during construction. If survey points are disturbed, it is the responsibility of the Contractor's Surveyor to reset the points at the Contractor's expense. Copies of the Surveyor's field notes and/or electronic files for point replacement shall be provided to the Owner.
1. The Surveyor shall locate all improvements for the project As-Built Asset Attribute Data using State Plane Coordinates as the horizontal datum and the benchmark referenced on the Drawings as the vertical datum. The Owner's Engineer will provide electronic files of the Drawings to be used by the Surveyor in complying with these specifications.
  2. The construction layout shall be established from the reference points shown or listed on the Drawings. The accuracy of any method of staking shall be the responsibility of the Contractor. All construction layout staking shall be done such as to provide for easy verification of the Work by the Owner.
- B. Only a land surveyor licensed in the State of Florida shall be employed for this Work. Monuments for principal control points were set by the Engineer and shall be protected by the Contractor from disturbance. If the monuments are disturbed, any Work that is governed by these monuments shall be held in abeyance until the monuments are reestablished by the Contractor and approved by the Engineer. The accuracy of all the Contractor's stakes, alignments and grades is the responsibility of the Contractor. However, the Engineer has the discretionary right to check the Contractor's stakes, alignments, and grades at any time.

Use survey control points to layout such work tasks as the following:

1. Clearing, grubbing, work limits, right-of-way lines and easements
  2. Locations for pipelines and all associated structures and appurtenances
- C. The Surveyor shall reference and replace any project control points, boundary corners, benchmarks, section corners, and right-of-way monuments that may be lost or destroyed, at no additional cost to the Owner. Establish replacement points based on the original survey control. Copies of all reference field notes and/or electronic files for point replacement shall be submitted to the Owner.



## CONSTRUCTION PROGRESS MEETINGS

- A. At the preconstruction meeting the *Contractor shall be provided with a blank electronic version of the spreadsheet for the tables: Asset Attribute Data and Pipe Deflection*. The Contractor's surveyor shall use these tables to input the data and shall not alter the table format or formulas.
- B. Contractor shall provide progressive Record Documents both as paper copies and electronic format described below.
  - 1. Construction Contract, As-Built Drawings, Specifications, General Conditions, Supplemental Conditions, Bid Proposal, Instruction to Bidders, Addenda, and all other Contract Documents.
  - 2. Specifications and Addenda: Record manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed as well as any changes made by Field Order, Change Order or other.
  - 3. Change orders, verbal orders, and other modifications to Contract.
  - 4. Written instructions by the Owner as well as correspondence related to Requests for Information (RFIs).
  - 5. Accepted Shop Drawings, samples, product data, substitution and "or-equal" requests.
  - 6. Field test records, inspection certificates, manufacturer certificates and construction photographs.
  - 7. As-Built Asset Attribute Data Table: Surveyor shall obtain field measurements of vertical and horizontal dimensions of constructed improvements. The monthly submittal shall include the Surveyor's certified statement regarding the constructed improvements being within the specified accuracies as described in Table 01720-1 Minimum Survey Accuracies or if not, indicating the variances.
  - 8. Pipe Deflection Table: Surveyor shall input the type of pipe, pipe manufacturer, PVC manufacturer deflection allowance, allowable angle of offset and radius of curvature, laying length of pipe, and coordinates. Surveyor shall certify the data entered are correct and indicate that the deflection allowance, offset or radius of curvature does not exceed 0.75% of the manufacturer's maximum allowable recommendation for deflection.

### 3.02 FINAL RECORD DOCUMENTS SUBMITTAL

- A. Submit the Final Record Documents within 20 days after Substantial Completion.
  - 1. Participate in review meetings as required and make required changes and promptly deliver the Final Record Documents to the Engineer and Owner.

### 3.03 STORAGE AND PRESERVATION

- A. Store Record Documents and samples at a protected location in the project field office apart from documents used for construction.
  - 1. Provide files and racks for storage of documents
  - 2. Provide locked cabinet or secure space for storage of samples.
- B. File documents and samples in accordance with CSI format with section numbers matching those in the Contract Documents.
- C. In the event of loss of recorded data, use means necessary to again secure the data to the Owner's approval.
  - 1. Such means shall include, if necessary, in the opinion of the Owner, removal and replacement of concealing materials.
  - 2. In such cases, provide replacements of the concealing materials to the standards originally required by the Contract Documents.

END OF SECTION

## SECTION 01740

### PERMITS

#### PART 1 - GENERAL

##### 1.01 General:

- A. The Contractor shall obtain and pay for all permits, licenses and fees related to the work. The Contractor shall also initiate all necessary jurisdictional agency reviews and approvals, and secure all required approvals, prior to commencement of the work. Inspection by City personnel is required in addition to, not in lieu of, municipal, or other agency department inspections. No project will be accepted until it has passed all inspections, including installation or replacement, necessary testing, pavement, and restoration requirements, etc.
- B. The Contractor shall familiarize himself with, and comply with, all requirements of required permits governing all work under this Contract. The Contractor's particular attention is called to any Special Conditions of the permits relating to construction procedures, excavation and backfill requirements, open trench restrictions, turbidity control, dewatering and sampling, traffic control, pavement restoration and all other general and special conditions. In the event any of the conditions of the permits conflict with the requirements of these Specifications, the most stringent conditions shall take precedence. New or required permit conditions for each jurisdictional agency shall be the responsibility of the Contractor to become aware of, and to follow, at no additional cost to the Owner.
- C. **The City has obtained the following permits for the project** (located in the Appendix B):

Agency	Permit No.	Expiration Date
Florida Department of Environmental Protection (water)	Pending	
City of Hollywood Building Department	Pending	
FDOT Utility Permit	Pending	

- D. Contractor is responsible to obtain any other permits required to complete construction and to obtain all necessary approval for the project construction. In addition, the City of Hollywood Building Department permit must be finalized by the Contractor.
- E. Any deviations from the Plans, Specifications or required permits, must first be approved by the City, even if approval for the change has been given by the permitting agency. Any changes requiring additional costs will be required to be submitted in

advance of the Contractor performing the work. Failure to do so may result in the Contractor performing the work at their own cost.

- F. The Contractor shall fully assume all obligations and responsibilities, monetary and otherwise, imposed by the permits throughout the life of the project, including but not limited to:
1. Proper maintenance of permit documentation and field records
  2. Proper maintenance of all permit-required field controls, including but not limited to, the following:
    - (a) Notifications, inspections, work during night or weekend hours
    - (b) Dewatering and dewatering discharge and permitting requirements
    - (c) Chemical spill prevention
    - (d) Erosion, sedimentation, turbidity, and dust retention
    - (e) Protection of existing facilities (utility, storm, power, etc.)
    - (f) Temporary vehicular and pedestrian traffic controls
  3. Payment of fines resulting from permit non-compliance
  4. Maintaining active permits and obtaining permit extensions when needed
  5. Providing certifications of all materials and equipment installed
  6. Performing successful inspections and tests required by the permits
  7. Correcting any work that is not in compliance with permits
  8. Performing successful equipment start-ups
  9. Providing Operation and Maintenance (O&M) manuals for installed equipment as required by permits
  10. Repair of any permanent traffic controls impacted by Contractor
  11. Close-out of all permits
- G. All surveying required by the project permits will be done by the Contractor's Florida registered Land Surveyor. This includes staking out limits of construction and Field Engineering per Section 01050. All jurisdictional as-built requirements for facilities constructed within the agencies right-of-way limits will be the responsibility of the

Contractor and at the Contractor's cost. Comments provided by the City, Engineer, and all regulatory agencies will be required to be responded to and as-builts updated at the Contractor's expense such that an actual final as-built survey and representation of all constructed facilities is as accurate as possible. As-builts are to be provided in CAD and will be required to be signed and sealed by a licensed PSM in the State of Florida. Up to ten (10) hard copy and/or digital signed and sealed sets, including CAD files or PDF files, may also be required of due to the various permitting agencies. All costs will be borne by the Contractor for as-built documentation, files, and plan sets.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION



## **DIVISION 2**

## **SITEWORK**

## SECTION 02000

### WATER DISTRIBUTION SYSTEM

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. The purpose of these Specifications is to establish uniform requirements for material and installation procedures for water mains. The City of Hollywood Department of Public Utilities (City) does not permit the use of 10-inch, 14-inch or 18-inch pipe, fittings or valves, except as may be approved for connections to existing mains. References herein to pipe, fittings and valves in these size ranges are for informational purposes only. Only those features which are considered necessary to provide acceptable materials and a satisfactory installation have been included.
- B. This Specification does not purport to cover all material or installation procedures which may be required, whether by the nature of the proposed work, or by the City, or by other regulatory agencies.
- C. It is intent of the City to obtain a complete and working installation under this project, and any items of labor, equipment or materials which may reasonably be assumed as necessary to accomplish this end shall be supplied whether or not they are specifically shown on the Plans or stated herein.

##### 1.02 QUALITY ASSURANCE

- A. All material and installation shall be in accordance with the City's Standard Specifications and Details.
- B. The material and installation for this project shall be in full compliance with all applicable standards listed in Section 01070, Applicable Standards and Codes.
- C. In accordance with the "Reduction of Lead in Drinking Water Act" (Act) enacted by the USEPA on January 4, 2011, effective January 4, 2014 all piping, fittings, fixtures, valves, and other appurtenances used in potable water supply and distribution systems shall be "lead free" as defined in Section 1417(d) of the Safe Drinking Water Act (SDWA). All requirements of the Act as it relates to the work under this Contract shall be strictly adhered to.
- D. All ductile iron piping, valves, fittings, restraints, and other appurtenances shall be manufactured in the United States.
- E. All nuts, bolts, washers, and restraining rods shall be A-316 stainless steel and be manufactured in the United States.

### 1.03 PROJECT APPROVAL

- A. The approval of the City, as defined in the Contract Documents, shall be secured prior to any construction related activity.

### 1.04 PERMITS, INSPECTIONS AND FEES

- A. The Contractor shall obtain and pay for all permits, official inspections and all other official fees, in connection with the work, in accordance with Section 01740, Permits.
- B. Inspection by City personnel is required in addition to, not in lieu of, municipal and other County department inspections (if any).
- C. No installation will be accepted until it has passed all inspections, including pavement installation or replacement and restoration of all work areas.

### 1.05 PRECONSTRUCTION CONFERENCE

- A. Prior to commencement of the work, the Contractor shall attend a "Preconstruction Conference" in accordance with Section 01200, Project Meetings.

### 1.06 SUBMITTALS

- A. The Contractor shall submit all shop drawings in accordance with Section 01300, Submittals.
- B. The Contractor shall furnish Record Drawings ("as-builts"), other Project Record Documents, operating and maintenance (O&M) manuals/instructions and all other submittals in accordance with Section 01300, Submittals.
- C. Where the Specifications require test certification or certification that certain products or material furnished are as specified, the Contractor shall deliver such certification to the City. No material or equipment shall be approved for use in the work until individual certification has been received.

### 1.07 SAFETY REQUIREMENTS

- A. The Contractor shall conduct the work in compliance with all applicable provisions of the Occupational Safety and Health Act of 1970, in general, and any subsequent amendments and revisions thereto and specifically to the provisions concerning confined space entry. The Contractor shall comply with all provisions of the State of Florida Trench Safety Act (TSA).
- B. The Contractor shall conduct his operations in such a manner, utilizing warning devices such as traffic cones, barricades and warning lights, and personnel such as flagmen and uniformed police officers, that the public is given adequate warning of hazards of the work site as may be deemed necessary by the County and/or the Engineer. See Section 01570, Traffic Regulations and Maintenance of Traffic.



- C. In the instance of men working within the manholes, the Contractor shall provide safety provisions to cover any possible consequences of structural failure and/or flooding. Such provisions might take the form of, but not be limited to, ladder nearby and in position to permit rapid egress; safety harness; stand-by pumping equipment; extra air supplies; and such other measures as the situation and good construction practices might indicate.
- D. Certain products specified in these Specifications contain warnings by the manufacturers that under certain conditions, if instructions for use of the product are not followed, a hazardous condition may exist. It is the Contractor's responsibility to instruct his workmen in the safe use of the product, or any product substitution.

## PART 2 - PRODUCTS

### 2.01 GENERAL

- A. The general requirements specified herein shall apply to all items of material and equipment, in addition to the Specifications for individual items appearing in PART 2, "PRODUCTS", of this section.
- B. All material for use in the Project shall be new and of recent domestic manufacture and shall be the products of reliable manufacturers or suppliers who, unless otherwise specified, have been regularly engaged in the manufacture of such materials and equipment for at least five (5) years.
- C. All fittings and components shall, wherever possible, be standard stock articles of well-known manufacturers.
- D. Where the Specifications designate the products of a particular manufacturer, the product specified has been found suitable for the intended use, but, unless otherwise provided, articles or products of similar characteristics may be offered for the approval of the City's, upon approval by the Engineer of Record.
- E. Copies of complete descriptive data shall be furnished regarding all material, consisting of dimension drawings, catalog references and other information necessary to clearly identify and evaluate each article.
- F. When substitutions are permitted, the Contractor shall make all necessary changes in adjacent or connected structures and equipment, at his expense.
- G. Unless otherwise specified, all steel bolts, nuts, washers and all other miscellaneous ferrous metal items (except ductile iron and stainless steel) furnished by the Contractor shall be hot-dip galvanized in accordance with ASTM A386, "Zinc Coating (Hot-Dip) on Assembled Steel Products" and ASTM A385, "Providing High-Quality Zinc Coatings (Hot-Dip)". Where the word "galvanized" or its abbreviation is used on the Plans or in the Specifications, it shall mean hot dip galvanized. Fabricated items shall be hot dip galvanized after fabrication. Internal threads shall be tapped or re-tapped after galvanizing.

- H. Where miscellaneous materials are required for a complete installation, the Contractor shall provide such materials in conformance with Section 15001, Water Services and Miscellaneous Fittings.
- I. The requirements of Section 01600, Equipment and Materials shall be strictly adhered to, where applicable.

## 2.02 CASTINGS

### A. GENERAL

- 1. Material used in the manufacture of the castings shall conform to ASTM A48, "Gray Iron Castings", for Class 30 iron. Manhole and valve box covers shall have a roadway type surface.
- 2. Valve boxes and covers for use with all main line valves, hydrant valves, air release devices and flushing valve outlets shall be in compliance with Section 15100, Valves General, and Section 15102, Tapping Sleeves and Tapping Valves.
- 3. Air release valve manhole covers shall be anchored down and vented in compliance with Part 2.02 F, "Air Release Valve Manhole Frame and Covers", of the City's standard Section 02774, Wastewater Gravity Collection System.
- 4. Castings shall be furnished unpainted with shot blasted finish.

### B. METER BOX COVERS

- 1. Meter box covers shall be as indicated in Section 15001, Water Services and Miscellaneous Fittings.

## 2.03 BRICK

- A. Concrete brick shall conform to ASTM Standard C55 Concrete Building Brick. Clay brick may be substituted for concrete brick. Clay brick shall conform to ASTM Standard C62, Building Brick (Solid Masonry Units Made from Clay or Shale).
- B. Bricks shall have true edges and sharp corners and shall have been cured for at least 14 days before being placed.

## 2.04 GROUT

- A. See Section 03600, Grouting.

## 2.05 FIRE HYDRANTS

- A. See Fire Hydrants, of Section 15001, Water Services and Miscellaneous Fittings.

## 2.06 METER BOXES, SECTIONAL PLATES AND VAULTS

- A. See Meter Boxes and Vaults for Water Service, of Section 15001, Water Services and Miscellaneous Fittings.
- 2.07 METER VALVES
  - A. See Section 15001, Water Services and Miscellaneous Fittings.
- 2.08 PIPE AND FITTINGS - CAST DUCTILE IRON
  - A. See Section 15060, Piping and Fittings.
- 2.09 PIPE AND FITTINGS - GALVANIZED STEEL
  - A. See Section 15060, Piping and Fittings.
- 2.10 PIPE AND FITTINGS - POLY (VINYL CHLORIDE) (PVC)
  - A. See Section 15060, Piping and Fittings.
- 2.11 STEEL CASING PIPE
  - A. See Section 15070, Jacking and Boring, as applicable.
- 2.12 REINFORCING STEEL
  - A. Bar reinforcement for concrete structure shall conform to the requirements of ASTM Standard A615, Deformed and Plain Billet-Steel Bars for concrete Reinforcement, Grade 60, Deformed, except that steel manufactured by the Bessemer Process will not be accepted. Wire mesh reinforcing for concrete structures shall be welded wire fabric meeting the requirements of ASTM Standard A185 Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
  - B. The Contractor shall furnish the City with the manufacturer's test certificates showing the steel to meet the above requirements, in addition to which the Engineer may take representative samples from the material on the job and have them tested by an independent testing laboratory.
  - C. Completely detailed shop drawings and bending schedules shall be submitted by the Contractor for the approval of the City. Such approval shall be obtained before the bars are cut and bent.
- 2.13 STRUCTURAL STEEL
  - A. All structural steel shall be of new stock, of domestic manufacture only. The steel shall meet the requirements of ASTM A36, Structural Steel. The Contractor shall furnish the City with manufacturer's test certificates showing that the steel has met the above requirements, in addition to which the City may take representative samples from the material on the job and have them analyzed by an independent testing laboratory.

- B. Steel vault covers shall conform to ASTM A36 for material and shall have the name of the manufacturer and date of manufacture permanently marked on the bottom side of the covers in letters 3/4-inch in size. The plate thickness of each item shall be as indicated in the Standard Details, exclusive of projecting lugs. The covers shall have reading lids, a non-skid diamond surface pattern and shall be non-rocking. Sizes, configurations, and type of reading lids are shown in the Standard Details. Following fabrication of the covers, including reading lids and permanent markings, they shall be thoroughly cleaned, and hot dip galvanized.
- C. All steel vault covers and hardware, including pipe support brackets, pipe straps, and pedestrian guards with the expanded metal fabric, and all nuts, bolts and washers for canal crossings, shall be hot dip galvanized after fabrication in accordance with ASTM A386.

#### 2.14 TAPPING SLEEVES

- A. See Section 15102, Tapping Sleeves and Tapping Valves.

#### 2.15 VALVES

- A. See Division 15 for the applicable valve section(s).

#### 2.16 BACKFILL AND EMBEDMENT MATERIAL

- A. Backfill, Select Backfill and Embedment material, for bedding, shall be as specified in Division 2 specifications.

#### 2.17 MISCELLANEOUS MATERIAL

- A. Section 15001 specifies material necessary for a complete installation, not specified herein. These materials, including the following, shall be furnished, and installed by the Contractor, when required, whether shown on the Plans or not:
  - 1. Anchor bolts, nuts, and washers
  - 2. Banding straps for pipe skids
  - 3. Blind flanges, cast iron
  - 4. Check valves in meter hook-ups
  - 5. Copper tubing
  - 6. Corporation stops
  - 7. Coupling adapters
  - 8. Gasket lubricant

9. Grout for boring and jacking (if required)
10. Guard post for fire hydrants
11. Joint materials for flanged pipe, valves, and fittings
12. Meter couplings
13. Paint, for fire hydrants and guard posts
14. Polyethylene encasement material
15. Polyethylene sheets for concrete anchors
16. Riprap
17. Roofing felt
18. Sand for casing
19. Service insulator assembly
20. Street elbow (90 Degrees)
21. Tie rods
22. Timber skids and blocking
23. Zinc rich paint

### PART 3 - EXECUTION

#### 3.01 CONSTRUCTION METHODS

- A. The Contractor's Registered Land Surveyor shall establish the line and grade in the field for the pipeline. Except as otherwise approved by the City, line and grade shall consist of establishing all points of bend and other stations not more than 100 feet apart along the proposed centerline of the pipe, or along a stationed offset line as shown on the Plans, marked by a nail in a metal cap if in pavement, with the station painted nearby or by a nail in the top of a wooden stake driven flush with the ground with the station marked on a flag stake nearby, if not in pavement. The Contractor shall install the pipe to the lines and grades shown on the Plans without help from the City, and shall supply all equipment and personnel necessary to accomplish this end.
- B. The Contractor shall make his equipment and men available to the Inspector for spot checking the accuracy of the pipe laying but shall not rely on the Inspector to set each pipe and fitting for him. The Inspector shall require the pipe to be brought within the

tolerances specified in subsection 3.04, Installation of Pipe and Fittings, herein, before the backfill is placed. If, due to unforeseen conditions, the line or grade of the pipe has to be changed from the planned location, the pipe shall not be concealed until the Inspector has noted the actual location, and the Contractor shall record the same for use in the preparation of Record Drawings.

- C. The ends of existing mains shall be temporarily capped or plugged and anchored to keep them clean and the joints from blowing apart from internal pressure until the new main can be connected to them.
- D. Where existing paving is damaged or removed by the Contractor, temporary paving shall be placed the same day as the ditch backfill and it shall be replaced with permanent paving, where shown on the Plans, within thirty (30) days.
- E. In addition to specific construction methods specified elsewhere, the following general requirements shall apply to the work under this project.
  - 1. Pipe and fittings shall at all times be handled with great care to avoid damage. In loading and unloading, they shall be lifted with cranes or hoists or slid or rolled on skidways in such manner as to avoid shock. Under no circumstances shall this material be dropped or allowed to roll or slide against obstructions. Pipe and other material shall be distributed along the right-of-way in advance of installation only to the extent approved by the City. Such materials shall be so placed as to keep obstruction to traffic at a minimum.
  - 2. Any work within the pipe and fittings shall be performed with care to prevent damage to the lining. Damaged lining shall be repaired, or the pipe section or fitting replaced as required by the City. No cables, lifting arms, hooks or other devices shall be inserted into the pipe or fitting. All lifting, pulling, or pushing mechanisms shall be applied to the exterior of the pipe or fitting.
  - 3. The Contractor's attention is called to the fact that connections to existing mains will probably involve the removal of a concrete anchor and cast iron plug; also that the existing mains may be cast iron with poured lead sulfur compound, or rubber gasket-type joints, concrete with flanged outlet connections, galvanized iron with threaded joints, or others. The Contractor should be equipped with the proper tools and equipment to make connections to any one or more of these existing mains.
  - 4. Where required by the City and at his discretion, the Contractor shall eliminate dust annoyance to adjacent property owners by sprinkling his work area with water or by other approved means.
- F. When mains are to be installed within existing street areas, the Contractor shall limit the amount of ditch open at any one time to one block (approximately 600 feet). The work in each block, including excavation, pipe laying, backfilling and temporary paving shall be completed before proceeding with the work in the next block.

- G. Boring and jacking operations and trenches remaining open to facilitate the repair of existing underground utilities damaged by the Contractor during excavation shall not be deemed a portion of the allowable 600 feet of open trench, unless otherwise decided by the City at its discretion.
- H. When mains are to be installed within existing street areas, the Contractor may employ more than one installation crew on the Project but not less than 1200 feet shall separate any two open trench sections as defined hereinbefore.

### 3.02 EXCAVATION

- A. See Section 02222, Excavation and Backfill for Utilities and Structures.

### 3.03 WATER SERVICE INSTALLATIONS

- A. See Section 02515, Water Service Connections and Transfers.

### 3.04 INSTALLATION OF PIPE AND FITTINGS

- A. The centerline of the pipe shall not vary by more than two inches from the location shown on the Plans and the top of the pipe shall not vary by more than two inches from the established grade, except at points where this tolerance must be changed to clear obstructions or make connections. Deviation from this location will be permitted only upon approval from the City.
- B. Upon satisfactory excavation of the pipe trench and completion of the pipe bedding, up to the level of the outside bottom of the proposed pipe barrel, 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. Placing and compacting the bedding up to the level of the lower one-third of the pipe barrel shall immediately follow the installation of the pipe.
- C. 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. Any pipe found defective shall be immediately removed and replaced with sound pipe.
- D. Lines shall be laid straight and depth of cover shall be maintained as shown on the Plans. Grades or pipe centerline elevations are shown on the Plans. The Contractor will be permitted to use surveying instruments to maintain alignment and grade. At least one elevation shot shall be taken every one hundred feet (100') or portion thereof and deviation along the pipeline, and at every fitting.
- E. All bends, tees and plugs shall be backed with concrete thrust blocks to undisturbed ground. Encasement type thrust anchors and collars shall be placed where indicated on

the Plans. The bearing area and/or volume of concrete in the anchors and blocks shall be as shown on the Plans or Standards.

- F. All bolts, nuts, gaskets, and other joint materials for use in the pipeline shall be properly protected.
- G. Gaskets shall be properly stored, and care shall be exercised to keep them away from heat, light, oil, gasoline, or other petroleum products. Gaskets shall always be kept clean and not handled with greasy or dirty hands. Gaskets shall be installed just prior to installation of pipe.
- H. The joints of all pipelines shall be properly homed. The joint used shall be approved by the Engineer prior to installation.
- I. Unless otherwise directed, pipe shall be laid with the bell ends facing in the direction of laying, and for lines on an appreciable slope, the bells shall, at the discretion of the Engineer, face upgrade.
- J. Push-on, restrained push-on and mechanical joints in ductile cast iron pipe and fittings shall be made in accordance with the manufacturer's standards except as otherwise specified herein. Joints between push-on and mechanical joint pipe and/or fittings shall be made in accordance with AWWA Standard C600, "Installation of Ductile Iron Water Mains and Their Appurtenances", except that deflection at joints shall not exceed one half of the manufacturer's recommended allowable deflection, or one-half of the allowable deflection specified in AWWA C600, whichever is the lesser amount.
- K. Before laying push-on, restrained push-on and mechanical joint pipe and fittings, all lumps, blisters, and excess bituminous coating shall be removed from the bell and spigot ends. The outside of each spigot and the inside of each bell shall be wire brushed and wiped clean and dry. The entire gasket groove area shall be free of bumps or any foreign matter which might displace the gasket. The cleaned spigot and gasket shall not be allowed to touch the trench walls or trench bottom at any time. Vegetable soap lubricant shall be applied in accordance with the pipe manufacturer's recommendations, to aid in making the joint. The workmen shall exercise caution to prevent damage to the gasket or the adherence of grease or particles of sand or dirt. Deflections shall be made only after the joint has been assembled.
- L. Flanged joints shall be used only where indicated on the Plans. Before making up flanged joints in the pipeline, the back of each flange under the bolt heads and the face of each flange shall have all lumps, blisters and excess bituminous coating removed and shall be wire brushed and wiped clean and dry. Flange faces shall be kept clean and dry when making up the joint, and the workmen shall exercise caution to prevent damage to the gasket or the adherence of grease or particles of sand or dirt. Bolts and nuts shall be tightened by opposites in order to keep flange faces square with each other, and to ensure that bolt stresses are evenly distributed.
- M. Bolts and nuts in flanged and mechanical joints shall be tightened in accordance with the recommendations of the pipe manufacturer for a leak-free joint. The workmen shall exercise caution to prevent overstress. Torque wrenches shall be used until, in the



opinion of the Engineer, the workmen have become accustomed to the proper amount of pressure to apply on standard wrenches.

- N. Cutting of ductile iron pipe for inserting valves, fittings, etc., shall be done by the Contractor in a neat and workmanlike manner without damage to the pipe, the lining, or the coating. Pipe shall be cut with a mechanical pipe saw. After cutting the pipe, the plain end shall be filed to remove all sharp edges and burrs.
- O. The pipe shall be restrained at reaction points as specified and shown on the Plans. The pipe manufacturer shall instruct the Contractor in the making of such joints. In addition, concrete thrust blocks shall be placed at all bends, tees, plugs and other fittings. Encasement-type thrust anchors and collars shall be placed where indicated on the Plans.
- P. Taps into ductile iron pipe for 2-inch or smaller diameter corporation stops shall be made using double strap service saddles. Taps into PVC C900 pipe for 2-inch or smaller diameter corporation stops shall be made using band saddles. Tapping saddles shall be as specified in Section 015001, Water Services and Miscellaneous Fittings. The Contractor shall provide suitable equipment for tapping as approved by the City. After the tap has been made, coat the inside of the pipe around the tap with Carboguard 891 White 1898, by Somay Products, or approved equal. Also, after the installation of corporation stop, heavily coat the exposed exterior surfaces of the stop with Carboguard 891 White 1898, by Somay Products, or approved equal.
- Q. Any work within the pipe shall be performed with care to prevent damage to the lining. Damaged lining shall be repaired as recommended by the pipe manufacturer or the pipe section replaced as required by the Engineer. No cables, lifting arms or other devices shall be inserted into the pipe. All lifting, pulling, or pushing mechanisms shall be applied to the exterior of the pipe barrel.
- R. Unless otherwise approved by the Engineer, the pipeline shall be cleaned by pigging at intervals not to exceed 30 lengths of pipe. Cleaning methods shall meet the Engineer's approval, and must be sufficient to remove silt, rocks, or other debris which may have entered the pipeline during its installation.
- S. Polyethylene encasement of ductile iron pipe and fittings, riser pipe and valves, if required by the City, shall be installed in accordance with ANSI/AWWA C105/A21.5, "Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids" Method A or B.
- T. Polyethylene encasement of valves and ductile iron riser pipes, if required by the City, shall be installed in accordance with ANSI/AWWA C105/A21.5, "Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids" Method A, B or C.
- U. Lines shall be laid straight and depth of cover shall be maintained as shown on the Plans.
- V. Grades or pipe centerline elevations are shown on the Plans. The Contractor shall be permitted to use surveying instruments to maintain alignment and grade. At least one

elevation shot shall be taken on each length of pipe and recorded. No abrupt changes in direction or grade will be allowed.

3.05 CLEANING, TESTING AND DISINFECTION

- A. See Section 15995, Pipeline Testing and Disinfection.

3.06 PAINTING

- A. See Section 09940, Painting.

3.07 SYSTEM IDENTIFICATION

- A. All pipe and fittings shall be clearly identified as water mains. The standard color is Cyanine Blue (Carboline, Color No. 2127) for all above ground water system piping and appurtenances.
- B. Buried pipes shall be color coded with a blue paint as stated in the Florida Administration Code, Subparagraph 62-555.320(21)(B)3 and as required by the Florida Department of Environmental Protection. If paint is applied during installation of the pipe, the paint shall be applied in a continuous line that runs parallel to the axis pipe and that is located on the top of the pipe. For pipes with an internal diameter of 24-inches or greater, paint shall be applied in continuous lines along each side of the pipe as well as along the top of the pipe.

3.08 FINAL ACCEPTANCE BY CITY

- A. The following conditions must be met prior to acceptance of the Project by the City:
- B. Where the mains fall within a pavement area, the area shall have the road rock base course placed and compacted prior to testing the mains. Final pavement installation shall be completed prior to acceptance. All castings within a pavement area shall be set with the top surface flush with the new pavement.
- C. All mains and appurtenances shall be flushed, pressure tested and disinfected in accordance with Section 15995, Pipeline testing and Disinfection. All mains and appurtenances must be approved for service by the Florida Department of Environmental Protection and the City prior to activation.
- D. All meter boxes and fire hydrants shall be installed within concrete slabs to the dimensions shown in the Standard Details.
- E. Acceptance by any other governing agency, if any.
- F. Final field inspection and completion of punch list items, if any, to the City's satisfaction.
- G. Final cleanup of work site in accordance with Section 01700, Project Closeout.

- H. Delivery and approval of "As Built" record drawings shall be in accordance with Sections 01300, Submittals, 01700, Project Closeout, and 01720, Project Record Documents and Survey.
- I. Final acceptance by the City.

END OF SECTION

## SECTION 02080

### ABANDONMENT, REMOVAL AND DISPOSAL OF EXISTING PIPE REMOVED FROM SERVICE

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: The work specified in this Section consists of furnishing all labor, materials, equipment and incidentals required to abandon or place out of service, remove, salvage and/or dispose of existing water main pipelines as shown on the Drawings and as specified herein.
- B. Applicable Codes, Standard and Specifications:
  - 1. American Water Works Association (AWWA) and American National Standards Institute (ANSI) latest edition: ANSI/AWWA C110/A21.10 - Ductile Iron Gray Iron Fittings; ANSI/AWWA C153/A21.53 - Compact Ductile Iron Fittings
  - 2. All work associated with asbestos material shall be performed in accordance with the standards listed below and all other applicable local, State, or Federal standards.
    - a. Florida Administrative Code, Chapter 17-25.1, "Asbestos"
    - b. National Emission Standards Hazardous Air Pollution (NESHAP), 40 CFR 61, subpart M.
    - c. Occupational Safety and Health Act, 29 CFR
    - d. Environmental Protection Agency (EPA) Asbestos Abatement Worker Protection Rule
    - e. Florida Statute 455.300
- C. Definitions:
  - 1. Pipeline Abandonment/Pipeline Placed out of Service - isolate from active pipelines, remove from service, dispose of pipeline contents, plug pipeline, fill pipeline with specified cementitious material, leave pipe in place.
  - 2. Pipeline Removal - isolate from active pipelines, remove from service. Dispose of pipeline contents, remove pipe, valves, fittings, dispose, or stockpile removed materials as required.

## 1.02 QUALITY ASSURANCE

- A. All work associated with the removal or taking out of service of existing asbestos cement pipelines shall be performed by a licensed asbestos abatement contractor or subcontractor registered in the State of Florida.
- B. Permits and Licenses: Contractor shall obtain and pay respective fees for all necessary permits and licenses for performing the Work and shall furnish a copy of same to the Engineer prior to commencing the Work. The Contractor shall comply with the requirements of the permits.
- C. Notices: Contractor shall issue written notices of planned work to companies or local authorities owning utility conduit, wires or pipes running to or through the project site. Copies of said notices shall be submitted to the Engineer.
- D. Standards:
  - 1. National Emission Standards Hazardous Air Pollution (NESHAP), 40 CFR Part 61, Subpart M, latest revision.
  - 2. Occupational Safety and Health Act, 29 CFR.
  - 3. The Environmental Protection Agency (EPA) Asbestos Abatement Worker Protection Rule.
  - 4. Florida Statutes.
- E. Quality Control
  - 1. It shall be the responsibility of the Contractor to provide supervision and inspections to ensure that the existing piping is removed and disposed, salvaged or abandoned or placed out of service as designated in the Drawings and as specified herein.

## 1.03 SUBMITTALS

- A. Submittals shall be submitted to the Engineer for review and acceptance prior to construction in accordance with Section 01300, Submittals.
  - 1. Grout – See Section 03600 requirements.
  - 2. Caps and plugs.
  - 3. A detailed description of equipment and operational procedures to accomplish the grouting operation, including grout mixture design, grout mixer data, grout samples and test data.

4. Asbestos abatement contractor/subcontractor licensing and qualifications, if necessary.
5. Pipeline grouting contractor/subcontractor licensing and qualifications.

## PART 2 - PRODUCTS

### 2.01 FITTINGS

- A. Fittings shall be manufactured of domestic ductile iron, conforming to ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53.
- B. All fittings shall be Class 250.

## PART 3 - EXECUTION

### 3.01 REMOVAL, ABANDONMENT AND DISPOSAL

- A. General: Existing piping designated on the Drawings to be removed shall be exposed and removed by the Contractor in accordance with the requirements specified herein.
- B. Potential types of pipe to be removed and/or abandoned in place or placed out of service:
  1. Ductile Iron/Cast Iron, PVC, PE, AC or PCCP Water Mains
- C. Removal and Disposal:
  1. Pipe designated to be removed and disposed by the Contractor shall be completely drained and the contents properly disposed. The pipe shall then be completely removed from the site, including fittings, valves other in-line devices.
  2. The Contractor shall be required to submit, obtain, and pay for all necessary permit fees for piping removal and disposal.
  3. If manufacturer's representatives are required for portions of piping that is to be removed on the plans (such as but not limited to PCCP piping), the Contractor shall be required to coordinate and pay for all costs associated with the manufacturer's representatives review, field review, submittal documents and other efforts as necessary for the piping removal and/or replacement or repairs.
- D. Removal of material to be salvaged:
  1. Pipe, fire hydrants, and valves to be removed and salvaged as directed by the Owner shall be completely drained and the contents properly disposed. The pipe shall then be thoroughly pressure washed, palletized on wooden skids to a dimension not exceeding the recommendation of the manufacturer, and conveyed to the Owner at the location designated by the Owner at no cost to the Owner.

E. Abandonment/Placed out of Service:

1. All pipe designated to be abandoned on this project shall be left in place and placed out of service. Piping that is 6-inches in diameter and larger shall be filled with grout in accordance with Section 03600, Grouting.
2. Plugs: Pipe to be grouted shall be capped or plugged with a fitting. All caps and plugs shall be submitted to the Engineer for approval. Existing pipe shall be properly restrained per the restrained joint table requirements with thrust collars or manufactured restraints based on conditions that result from cutting pipes and/or closing valves to grout pipe to be abandoned or placed out of service.

3.02 PREPARATION

- A. Traffic control measures shall be implemented prior to construction.

3.03 PERFORMANCE

A. Pipe Isolation:

1. Where indicated on the Drawings, line stops shall be utilized to isolate portions of pressurized mains.
2. In lieu of line stops, the use of existing valves may be used to isolate portions of the pipeline. Submit work plan showing existing valves to be closed to provide isolation. Review of plan will be conducted by Engineer and Utility to determine affected area. In no case will service to residences and businesses affected by the isolation be allowed to be interrupted by more than 1 hour.
3. Line stops shall be completed while the pipelines are pressurized.
4. Line stops shall consist of a line stop fitting, stopping valve, blind flange for installation after stop is completed, and 1-inch equalization/purge fitting.
5. Provide additional pipe restraining in the vicinity of the line stop for preventing pipe movement due to any unbalanced forces created by the line stop and subsequent cutting and removal of existing pipe adjacent to any line stop.
6. In the event a pressurized potable water pipeline that will remain in service loses pressure to less than 20 psi, disinfect the water main and submit bacteriological test results to the Florida Department of Environmental Protection. Satisfactory test results are required to be submitted for tests conducted on two consecutive days.

B. Pipe Cutting and Plugging:

1. Cut all pipe as necessary. Cut sections of pipe shall be cleared and smoothed. The contents of the pipe are to be removed and disposed as allowed by local rules and regulations.
  2. Plug ends of pipe to remain in accordance with the following:
    - a. Remaining pressurized pipe - install ductile iron plug fitting. Install restraining devices to prevent pipe movement.
    - b. Remaining non-pressurized pipe - grout ends of pipe or install ductile iron cap fitting.
- C. Pipeline Abandonment: Limits of removal and/or abandonment (take out of service) shall be in accordance with information shown on the Drawings. Abandonment shall be in accordance with the following:
1. Pipes under roadways or less than five feet from the edge of pavement, 2-inches and larger, shall be fully grouted along entire length. Pipe sizes less than 2-inches shall be capped or grouted at the ends of the pipe.
  2. Pipes outside of roadways five feet or greater from the edge of pavement, 2-inches and larger, shall be fully grouted along entire length. Pipes sizes less than 2 inches shall be capped or grouted at the ends of the pipe. All ductile iron pipes shall be capped or grouted at the ends of the pipe.
- D. Pipeline Grouting: See Section 03600 requirements.
- E. Restoration
1. All areas disturbed as a result of pipeline removal and abandonment shall be restored to equal or better condition than the existing condition.

END OF SECTION



## SECTION 02100

### CLEARING AND GRUBBING

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENT

- A. The Contractor shall furnish all materials, equipment, and labor necessary to complete all clearing and grubbing as specified herein and in accordance with the Drawings.
- B. The Contractor shall box and protect all trees, shrubs, lawns, and landscaping. Any damaged trees or landscaping shall be restored at the Contractor's cost.

##### 1.02 STANDARDS AND REGULATIONS

- A. The Contractor shall comply with all state, county, and local regulations regarding disposal of debris resulting from the clearing and grubbing operation.
- B. The Contractor shall dispose of debris resulting from the clearing and grubbing operation at off-site locations in a lawful manner.

##### 1.03 PROTECTION OF PERSONS AND PROPERTY

- A. All work shall be performed in such a manner to protect all personnel, workmen, pedestrians, and adjacent property and structures from possible injury or damage.
- B. Required wind load calculation for equipment mounted outside. Contractor to submit equipment support detail for approval.

#### PART 2 - PRODUCTS (NOT USED)

#### PART 3 - EXECUTION

##### 3.01 GENERAL

- A. The Work specified in this section consists of clearing and grubbing within the areas required in the easements, parcels owned by the City, and/or right-of-ways to install the pipeline, appurtenances and other project work as shown on the Drawings. The Work shall include the proper disposal of the resultant products and debris in areas provided by the Contractor unless noted otherwise.

- B. Property obstructions which are to remain in place, such as buildings, sewers, drains, pipelines, conduits, poles, walls, posts, bridges, etc., are to be carefully protected from injury and are not to be displaced, except for unusual cases when so specified by the Engineer.
- C. Standard clearing and grubbing shall consist of the complete removal and disposal of all trees, shrubs, timber, brush, stumps, roots, grass, weeds, rubbish and other obstructions resting on or protruding through the surface of the existing ground and the surface of excavated areas.
- D. Excavation resulting from the removal of trees, roots, and the like shall be filled with suitable material, as approved by the Engineer, and thoroughly compacted per the requirements contained in Section 02222, Excavation and Backfill for Utilities and Structures.

### 3.02 DISPOSAL OF MATERIALS

- A. Timber, stumps, muck, brush, roots, rubbish, and other objectionable material resulting from clearing and grubbing shall be disposed of in a lawful manner, off site by the Contractor.
- B. Burning of any debris resulting from the clearing and grubbing work will not be permitted at the site.

END OF SECTION

## SECTION 02140

### DEWATERING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Design, furnish, operate, maintain, and remove temporary dewatering systems to control groundwater and surface water to maintain stable, undisturbed subgrades, and permit work to be performed under dry and stable conditions. Work to be done as part of dewatering includes, but is not limited to:
  - 1. Lower the groundwater level
  - 2. Lower hydrostatic pressure.
  - 3. Sampling and discharge requirements.
  - 4. Prevent surface water from entering the excavation during construction.
  - 5. Implement erosion control measures for disposing of discharge water.
- B. Groundwater within the excavation area shall be lowered to at least 1 foot below the lowest excavation levels as specified and as indicated.
- C. Common groundwater recharge methods include, but are not limited to, deep wells, large sumps or any combination thereof.
- D. The Contractor shall obtain the required permits and pay any associated permit fees for the discharge from the Contractor's dewatering systems in accordance with Broward County and South Florida Water Management District (SFWMD) requirements and all other jurisdictional agencies as necessary. The Contractor shall conform with all permit requirements. In addition, a listing of potentially contaminated sites per the Broward County contaminated site database [Broward County Contaminated Sites \(arcgis.com\)](http://arcgis.com) and/or Florida Department of Environmental Protection contaminated site database [Florida DEP Cleanup Sites \(state.fl.us\)](http://state.fl.us) is included in the Appendix for Contractor review/reference. As their website is updated regularly, the Contractor shall be responsible to review the latest contaminated site listing and allow time for any initial monitoring, dewatering sampling/testing and subsequent permitting time frames if there is evidence of groundwater contamination in the dewatering samples. No delay claims will be allowed for the Contractor's lack of initial due diligence and/or installation of monitoring wells for sampling of dewatering discharge if not implemented prior to commencement of construction such that necessary measures and permitting efforts/submittals can be performed without impact to the project schedule.

##### 1.02 RELATED WORK

- A. Section 01560 – Special Controls
- B. Section 02160 – Temporary Excavation Support Systems
- C. Section 02210 – Earth Excavation, Backfill, Fill and Grading
- D. Section 02222 – Excavation and Backfill for Utilities and Structures
- E. Section 02225 – Contaminated Soils and Groundwater

#### 1.03 SUBMITTALS

- A. Submit the following in accordance with Section 01300, Submittals:
  - 1. Qualification of the Contractor's dewatering specialist's or firm's qualifications a minimum of four (4) weeks prior to execution of any dewatering. The submittal shall include, but not be limited to:
    - (a) Qualifications of specialist's or firm's Registered Professional Engineer as specified in Paragraph 1.04 B.
    - (b) Qualifications of specialist's or firm's field representative, as specified in paragraph 1.04 B, who shall oversee the installation, operation and maintenance of the dewatering system.
  - 2. Submit a dewatering plan at least two weeks prior to start of any dewatering operation. Do not submit design calculations. The review will be only for the information of the Owner and third parties for an overall understanding of the project relating to access, maintenance of existing facilities and proper utilization of the site. The Contractor shall remain responsible for the adequacy and safety of the means, methods and sequencing of construction. The plan shall include the following items as a minimum:
    - (a) Dewatering plan and details stamped and signed by a Registered Professional Engineer.
    - (b) Certificate of Design: Refer to Section 01300, Submittals.
    - (c) A list of equipment including, but not limited to, pumps, prime movers, and standby equipment.
    - (d) Detailed description of dewatering, maintenance, and system removal procedures.
    - (e) Monitoring plan and details, including, but not limited to, number and locations of observation wells, and geotechnical instruments such as

settlement markers and piezometers, and frequency of reading the monitoring devices.

- (f) Erosion/sedimentation control measures, and methods of disposal of pumped water. Sampling of dewatering discharge and meeting the required permitting agency parameters.
  - (g) List of all applicable laws, regulations, rules, and codes to which dewatering design conforms.
  - (h) List of assumptions made for design of dewatering and for groundwater recharge systems, including but not limited to groundwater levels, soil profile, permeability, and duration of pumping and or recharge.
  - (i) Turbidity measurements in receiving waters as required by the permit. A turbidity control and monitoring where discharge is to a body of water.
- 3. Measurement records consisting of observation well groundwater records and the geotechnical instrumentation readings within one day of monitoring.
  - 4. A modified dewatering plan within 24 hours, if open pumping from sumps and ditches results in boils, loss of fines, sinkholes or softening of the ground.

#### 1.04 QUALITY ASSURANCE

- A. Provide in accordance with Section 01400, Testing and Inspection and as specified.
- B. Employ the services of a dewatering specialist or firm having the following qualifications:
  - 1. Have completed at least five (5) successful dewatering projects of equal size and complexity and with equal systems within the last five (5) years.
  - 2. Retain the services of a Florida Registered Professional Engineer having a minimum of five (5) years of experience in the design of well points, deep wells, or equal systems.
  - 3. Retain the services of a field representative having a minimum of five (5) years of experience in installation of well points, deep wells, or equal systems.
- C. If subgrade soils are disturbed or become unstable due to dewatering operation or an inadequate dewatering system, notify the Owner's representative, stabilize the subgrade, and modify system to perform as specified at no additional cost to the Owner.

- D. Notify the Owner's representative immediately if any settlement or movement is detected on structures. If the settlement or movement is deemed by the Owner's representative to be related to the dewatering, take actions to protect the adjacent structures and submit a modified dewatering plan to the Owner's representative within 24 hours. Implement the modified plan and repair any damage incurred to the adjacent structures at no additional cost to the Owner.
- E. If oil and/or other hazardous materials are encountered after dewatering begins, immediately notify the Owner's representative.

#### 1.05 DELIVERY, STORAGE AND HANDLING

- A. Provide in accordance with the General Requirements.

#### 1.06 PROJECT/SITE CONDITIONS

- A. Subsurface Conditions: Refer to Geotechnical Report provided specifically for the project. The Contractor is responsible for investigating existing soil conditions as the Geotechnical Report does not assure all subsurface site conditions are represented.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Provide settlement markers, observation wells, piezometers and/or any other geotechnical instruments in accordance with the submitted dewatering plan.
- B. Provide casings, well screens, piping, fittings, pumps, power and other items required for dewatering system.
- C. Provide sand and gravel filter around the well screen. Wrapping geotextile fabric directly around the well screen shall not be allowed.
- D. When deep wells, well points, or vacuum well points are used, provide pumping units capable of maintaining high vacuum and handling large volumes of air and water at the same time.
- E. Provide and store auxiliary dewatering equipment, consisting of pumps and hoses on the site in the event of breakdown, at least one (1) pump for every five (5) used.
  - 1. Provide and maintain erosion/sedimentation control devices as indicated or specified and in accordance with the dewatering plan.
  - 2. Provide temporary pipes, hoses, flumes, or channels for the transport of discharge water to the discharge location.

3. Provide cement grout having a water cement ratio of 1 to 1 by volume.
4. Provide for dewatering discharge sampling as required by regulatory agencies. All sampling and permit fees are to be paid by the Contractor.
5. Sampling parameters must meet regulatory standards prior to dewatering discharge. The Contractor is required to pay for all sampling and testing, including permitting efforts as necessary for dewatering discharge of groundwater.

## PART 3 - EXECUTION

### 3.01 EXECUTION

- A. Execution of any earth excavation, installing earth retention systems, and dewatering shall not commence until the related submittals have been reviewed by the Owner's representative with all Owner's representative comments satisfactorily addressed and the geotechnical instrumentation has been installed.
- B. Furnish, install and maintain dewatering system in accordance with the dewatering plan and regulatory requirements.
- C. Carry out dewatering program in such a manner as to prevent undermining or disturbing foundations of existing structures or of work ongoing or previously completed.
- D. Do not excavate until the dewatering system is operational.
- E. Unless otherwise specified, continue dewatering uninterrupted until all structures, pipes, and appurtenances below groundwater level have been completed such that they will not be floated or otherwise damaged by an increase in groundwater elevation.
- F. Discontinue open pumping from sumps and ditches, if such pumping is resulting in boils, loss of fines, softening of the ground, or instability of the slopes. Modify dewatering plan and submit to the Owner's representative and required regulatory agencies at no additional cost to the Owner.
- G. Where subgrade materials are disturbed or become unstable due to dewatering operations, remove and replace the materials in accordance with Section 02210, Earth Excavation, Backfill, Fill and Grading, at no additional cost to the Owner.
- H. Dewatering Discharge:
  1. Install and monitor recharge systems when specified and/or indicated and in accordance with the submitted dewatering plan.

2. Install sand and gravel filters in conjunction with well points and deep wells to prevent the migration of fines from the existing soil during the dewatering operation.
3. Transport pumped or drained water to discharge location without interference to other work, damage to pavement, other surfaces, or property.
4. Provide separately controllable pumping lines.
5. The Owner's representative reserves the right to sample discharge water at any time. The Contractor is required to meet all regulatory requirements for sampling and sampling parameters, prior to dewatering discharge.
6. Immediately notify the Owner's representative if suspected contaminated groundwater is encountered. Do not pump water found to be contaminated with oil or other hazardous material to the discharge locations.

I. Monitoring Devices and Records:

Install, maintain, monitor and take readings from the observation wells and geotechnical instruments in accordance with the dewatering plan.

1. Install settlement markers on structures within the zone of influence for dewatering a distance equal to twice the depth of the excavation, from the closest edge of the excavation. Conduct and report settlement surveys to 0.01 feet.
2. For large rectangular, square or circular mass excavations the zone of influence shall be defined by the actual cone of watering influence corresponding to a 10% increase in effective vertical stress.

J. Install and maintain erosion/sedimentation control devices at the point of discharge and in accordance with the dewatering plan and regulatory requirements.

K. Removal:

1. Do not remove dewatering system without written approval from the Engineer, and/or the City.
2. Backfill and compact sumps or ditches with clean fill in accordance with Section 02210 - Earth Excavation, Backfill, Fill and Grading.
3. All dewatering wells shall be abandoned upon completion of the work, and completely backfilled with cement grout.



3.02 CONTRACT CLOSEOUT

- A. Provide in accordance with Section 01700.

END OF SECTION

## SECTION 02160

### TEMPORARY EXCAVATION SUPPORT SYSTEMS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Design, furnish and install temporary excavation support systems as required to maintain lateral support, prevent loss of ground, limit soil movements to acceptable limits and protect from damage existing and proposed improvements including, but not limited to, pipelines, utilities, structures, roadways, and other facilities.
- B. Common types of excavation support system include, but are not limited to, singular or multiple stages comprised of cantilevered or internally braced soldier piles and lagging, steel sheet pile wall, timber sheet pile wall, trench box, or combinations thereof. Trench box temporary excavation support system is only acceptable for pipe or utility trench excavations. Temporary unsupported open cut excavation with stable sloping sides is allowed where applicable.
- C. Wherever the word "sheeting" is used in this section or on the contract drawings, it shall be in reference to any type of excavation support system specified except trench box.
- D. Construction of the temporary excavation support systems shall not disturb the existing structures or the completed proposed structures. Damage to such structures shall be repaired by the Contractor at no additional cost to the Owner.
- E. Adjacent structures are those that bear upon soils above the proposed excavation depth and within a distance equal to twice the total depth of the excavation away from the closest edge of the excavation. Monitor and protect adjacent structures as specified and indicated.
- F. Vibration monitoring for excavation support systems will be performed by Contractor's vibration consultant and monitoring firm. Vibration due to Contractor's operations shall not exceed specified limits 1.05 E.
- G. Construction operations not to exceed specified noise limits in accordance with the City of Hollywood Noise Ordinances.
- H. The Contractor shall bear the entire cost and responsibility of correcting any failure, damages, subsidence, upheaval, or cave-ins as a result of improper installation, maintenance or design of the temporary excavation support systems. The Contractor shall pay for all claims, costs and damages that arise as a result of the work performed at no additional cost to the Owner.

- I. All excavation support systems are to be designed and installed in conformance with the latest OSHA requirements.

#### 1.02 RELATED WORK

- A. Section 02210 – Earth Excavation, Backfill, Fill and Grading
- B. Section 02222 – Excavation and Backfill for Utilities and Structures
- C. Division 3

#### 1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM):
  - 1. A36: Standard Specification for Structural Steel
  - 2. A328: Standard Specification for Steel Sheet Piling
  - 3. A416: Standard Specification for Strand Steel, Uncoated Seven-Wire for Prestressed Concrete
  - 4. A722: Specification for Uncoated High-Strength Steel Bar for Prestressing Concrete
  - 5. A615: Standard Specifications for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
- B. American Wood-Preserves Association (AWPA) Standards.
- C. American Welding Society (AWS) Code: D1.1.
- D. Federal Standard, FS TT-W-571: Wood Preservation and Treating Practices.
- E. Occupational Safety and Health Administration (OSHA) Standards and Regulations contained in Title 29: Subpart P - Excavations, Trenching and Shoring.
- F. American Concrete Institute (ACI)
  - 1. ACI 304: Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.

## 1.04 SUBMITTALS

A. Submit the following in accordance with Section 01300:

1. Submit the following qualifications four (4) weeks prior to the construction:
  - (a) Qualifications of independent vibration consulting and monitoring firm as specified in Paragraph 1.05 D.
  - (b) Qualifications of Contractor's temporary excavation support system designer as specified in Paragraph 1.05 G.
  - (c) Qualifications of Contractor's temporary excavation support system installer as specified in Paragraph 1.05 H.
  - (d) Qualifications of Contractor's independent tieback testing laboratory as specified in Paragraph 1.05 I, if a tieback system is utilized.
  - (e) Qualifications of Contractor's temporary excavation support system installation supervisor as specified in Paragraph 1.05 J.
  - (f) Qualifications of vacuum excavation subcontractor as specified in Paragraph 1.05 F, if drilled micro piles (DMPs) for utilities are utilized.
2. Submit a temporary excavation support plan stamped and signed by a Registered Professional Engineer at least two weeks prior to start of the construction. Do not submit design calculations. The review will be only for the information of the Owner and third parties for an overall understanding of the project relating to access, maintenance of existing facilities and proper utilization of the site. The Contractor shall remain responsible for the adequacy and safety of the means, methods and sequencing of construction. The plan shall include the following items as a minimum.
  - (a) Proposed temporary excavation support system(s), details, location, layout, depths, extent of different types of support relative to existing features and the permanent structures to be constructed, and methods and sequence of installation and removal.
  - (b) Certificate of Design: Refer to Section 01300.
  - (c) A list of all design assumptions, including safety factors used for the temporary excavation support system(s) and all lateral pressures used for each system.

- (d) If utilizing a tieback system, include tieback installation procedures and criteria for acceptance of tiebacks for performance and proof tests. Submit the tieback testing results to the Engineer for information only.
  - (e) Requirements of dewatering during the construction.
  - (f) Minimum lateral distance from the edge of the excavation support system for use for vehicles, construction equipment, and stockpiled construction and excavated materials.
  - (g) List of equipment used for installing the excavation support systems.
  - (h) Monitoring schedule, installation procedures and location plans for vibration/noise monitoring, geotechnical instrumentation (deformation monitoring points, inclinometers, etc.) and observation wells/piezometers to monitor ground, excavation support system, adjacent structures and groundwater fluctuation during the entire construction period.
3. Submit a Construction Contingency Plan specifying the methods and procedures to maintain temporary excavation support system stability if the allowable movement of the adjacent ground and adjacent structures is exceeded.
  4. Monitoring data within one (1) day of data collection from vibration and noise recording equipment, observation wells, deformation monitoring points and offset lines. Data shall include:
    - (a) Horizontal and vertical movements of geotechnical instruments and groundwater readings.
    - (b) New movements since the initial readings of the geotechnical instruments.
    - (c) Weekly summary in tabular and graphic form at the end of each week.
    - (d) A schematic plan of excavation and/or relevant construction activities at the time of monitoring.
  5. For excavation support systems left in place, submit the following as-built information prior to backfilling and covering the excavation support systems:
    - (a) Survey locations of the temporary excavation support systems, including coordinates of the ends and points of change in direction.

- (b) Type of the temporary excavation support system.
- (c) Elevations (NAVD 88, or as applicable for the current survey datum) of top and bottom of the excavation support systems left in place.

#### 1.05 QUALITY ASSURANCE

- A. Provide in accordance with Section 01400 and as specified herein.
- B. Conform to the requirements of the OSHA Standards and Interpretations: "Part 1926 Subpart P - Excavation, Trenching, and Shoring", and all other applicable laws, regulations, rules, and codes.
- C. Construction operations to conform to noise regulations provided in the Noise Control Plan and this Section.
- D. Retain the services of an independent vibration consulting firm with the following in-house personnel to conduct the following vibration monitoring requirements:
  - 1. Preparing, reviewing and signing of monitoring plans and daily reports, and overseeing of the monitoring and interpretation of the vibration data shall be performed by personnel with the following qualifications:
    - (a) Be a Florida Registered Professional Engineer.
    - (b) Have a minimum of five (5) years' experience in the vibration consulting field.
    - (c) Have successfully completed at least five (5) projects with vibration-inducing construction operations, pile driving, and noise levels equal to or more severe than those to be encountered.
  - 2. Assist Contractor in selecting pile driving equipment which will generate the lowest vibration and noise levels.
  - 3. Installation, monitoring and interpretation of monitoring equipment shall be performed by personnel with the following qualifications:
    - (a) Have at least three (3) years of experience in the operation of monitoring equipment proposed for use and interpretation of records produced by such equipment.
    - (b) Have installed, operated, monitored and interpreted equipment and records on at least three (3) projects with vibration-inducing construction operations, pile driving, and noise levels equal to or more severe than those to be encountered.

- E. The peak particle velocity for pile driving, or other vibration-inducing operations, shall not exceed the following:

Type of	Age of	Peak Particle
<u>Concrete</u>	<u>Concrete, hrs</u>	<u>Velocity in/sec</u>
Mass Concrete	0-11	1.0
(footings, mats, Slab-on-grade, fill concrete, etc.)	11 and over	2.0
Concrete Structures	0-11	0.5
(walls, columns,	11-24	1.0
elevated slabs, etc.)	24 and over	2.0
Existing Structures, residences or utilities	-	0.5

- F. If utilizing deformation monitoring points (DMPs) for utilities, vacuum excavation shall be performed by subcontractor having five (5) years of experience in non-destructive vacuum excavation methods for utilities.

- G. Prepare design, including calculations and drawings, under the direction of a Professional Engineer registered in the state where the project is located and having the following qualifications.

1. Not less than ten (10) years' experience in the design of specific temporary excavation support systems to be used.
2. Completed not less than five (5) successful temporary excavation support system projects of equal type, size, and complexity within the last five (5) years.

- H. Temporary Excavation Support System Installer's Qualifications:

1. Not less than three (3) year experience in the installation of similar types and equal complexity as the proposed system.
2. Completed not less than three (3) successful excavation support systems of similar type and equal complexity as the proposed system.

- I. If utilizing a tieback system, employ an independent testing laboratory to test the tieback system with the following qualifications:
  - 1. Be accredited by the American Association of State Highway and Transportation Officials (AASHTO) Accreditation Program.
  - 2. Employ personnel conducting testing who are trained in the methods and procedures to test and monitor tieback systems of similar type and equal complexity, as the proposed system.
  - 3. Have not less than five (5) years of experience in testing of tieback systems of similar type and equal complexity as the proposed system.
  - 4. Have successfully tested at least three (3) tieback systems of similar type and equal complexity as the proposed system.
- J. Install all temporary excavation support systems under the supervision of a supervisor having the following qualifications:
  - 1. Not less than five (5) years of experience in installation of systems of similar type and equal complexity as the proposed system.
  - 2. Completed at least five (5) successful temporary excavation support systems of similar type and equal complexity as the proposed system.
- K. All welding shall be performed in accordance with AWS D1.1.

#### 1.06 DESIGN CRITERIA

- A. Design of temporary excavation support systems shall meet the following minimum requirements:
  - 1. Support systems shall be designed for earth pressures, hydrostatic pressure, equipment, temporary stockpiles, construction loads, roadways, and other surcharge loads.
  - 2. Design a bracing system to provide sufficient reaction to maintain stability.
  - 3. Limit movement of ground adjacent to the excavation support system to be within the allowable ground deformation as specified.
  - 4. Design the embedment depth below bottom of excavation to minimize lateral and vertical earth movements and provide bottom stability. Toe of braced temporary excavation support systems shall not be less than 5 feet below the bottom of the excavation.



5. Design temporary excavation support systems to withstand an additional 2 feet of excavation below proposed bottom of excavation without redesign except for the addition of lagging and/or bracing.

#### 1.07 DELIVERY, STORAGE AND HANDLING

- A. Store sheeting and bracing materials to prevent sagging which would produce permanent deformation. Keep concentrated loads which occur during stacking or lifting below the level which would produce permanent deformation of the material.

#### 1.08 PROJECT/SITE CONDITIONS

- A. Subsurface Conditions: Refer to Sections 01500, 02210, 02222, and the project Geotechnical Report.
- B. Concrete: Section 03300 - Cast in Place & Precast Concrete, Reinforcing and Formwork.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Structural Steel: All soldier piles, wales, rakers, struts, wedges, plates, waterstop and accessory steel shapes shall conform to ASTM A36.
- B. Steel Sheet Piling: ASTM A328, continuous interlocking type.
- C. Timber Lagging Left in Place: Pressured treated per appropriate AWWA standards.
- D. Tieback Tendons: Tieback tendons shall be high strength steel wire strand cables conforming to ASTM A416, or bars conforming to ASTM A722. Splicing of individual cables shall not be permitted.
- E. Raker Ties: ASTM A615 Grade 60.
- F. Cement Grout Materials and Admixtures For Tieback Anchorages: Grout cube strength shall be a minimum 3500 psi at 7 days and 5000 psi at 28 days.
- G. Tamping tools adapted for backfilling voids after removal of the excavation support system.
- H. Provide specific trench box sizes for each pipe and utility excavation with structural capacity of retaining soil types as described in OSHA's 29 CFR Part 1926 Subpart P.

## 2.02 EQUIPMENT

- A. A vibratory hammer shall be utilized for driving the temporary sheet piling providing that such operations do not exceed vibration/noise requirements of the specifications. Impact hammer shall be utilized when vibratory hammer is unable to drive temporary sheet piling to required depth and/or unable to meet vibration requirements. Impact hammer shall also meet noise and vibration requirement.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Installation of the temporary excavation support systems shall not commence until the related earth excavation and dewatering submittals have been reviewed by the Engineer with all Engineer's comments satisfactorily addressed.
- B. Install excavation support systems in accordance with the temporary excavation support plan.
- C. If utilizing a tieback system, all performance and proof tests shall be conducted in the presence of the Engineer. Testing performed without the Engineer or Owner's representative present will not be accepted. Repeat testing in the Engineer's presence at no additional cost to the Owner.
- D. Do not drive sheeting within 100 feet of concrete less than seven (7) days old.
- E. Carry out program of temporary excavation support in such a manner as to prevent undermining or disturbing foundations of existing structures of work ongoing or previously completed.
- F. Bottom of the trench box excavation support system shall be above the pipe invert prior to installing the pipe.
- G. Install and read geotechnical instrumentation in accordance with the temporary excavation support plan. Notify the Engineer or Owner's representative immediately if any geotechnical instrumentation is damaged. Repair or replace damaged geotechnical instrumentation at the sole option of the Engineer and at no additional cost to the Owner.
- H. Continuously monitor movements of the ground adjacent to excavation support systems and adjacent structures. If the measured movements approach or exceed the allowable movements, take immediate steps to arrest further movement by revising procedures such as providing supplementary bracing, filling voids behind the trench box, supporting utilities or other measures (Construction Contingency Plan) as required.

- I. Notify utility owners if existing utilities interfere with the temporary excavation support system. Modify the existing utility with the utility owners' permission or have the utility owner make the modifications at no additional cost to Owner.

### 3.02 GROUND DEFORMATION ADJACENT TO EXCAVATION SUPPORT SYSTEMS

- A. Allowable Vertical (heave/settlement) and Lateral Movements: 2 inches [5 cm] maximum for the trench box excavation support system, and 1 inch [2.5 cm] maximum for other types of excavation support systems at any location behind the excavation support system.
- B. Monitoring personnel shall use a procedure for reading and recording geotechnical instrumentation data which compares the current reading to the last reading during data collection to eliminate spurious readings.
- C. Plot the observed ground deformation readings versus time. Annotate the plots with construction loading and excavation events having an impact on the readings. Evaluate plots by means of secondary rate-of-change plots to provide early warning of accelerating ground movements.
- D. Notify the Engineer when the allowable ground deformation is exceeded.
- E. Implement Construction Contingency Plan under direction of the temporary excavation support system designer and the Engineer.

### 3.03 REMOVAL OF EARTH RETENTION SYSTEM

- A. Sheet piling shall not be left in place.
- B. Remove the temporary excavation support system without endangering the constructed or adjacent structures, utilities, or property. Immediately backfill all voids left or caused by withdrawal of temporary excavation support systems with bank-run gravel, screened gravel or select borrow by tamping with tools specifically adapted for that purpose.
- C. When tiebacks are used, release tension in tiebacks as the excavation is backfilled. Do not leave tensioned tieback in place at the completion of the work.
- D. The excavation support system left-in-place shall be cut-off a minimum of 2 feet below the bottom of the next higher foundation level or a minimum of 5 feet below finished grade.

### 3.04 CONTRACT CLOSEOUT

- A. Provide in accordance with Section 01700.

END OF SECTION

## SECTION 02210

### EARTH EXCAVATION, BACKFILL, FILL AND GRADING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Perform the following earth excavation, backfill, fill and grading as indicated or specified:
  - 1. Make excavations to accommodate piping, conduits, foundations, and other structures.
  - 2. Provide materials for backfilling excavations and constructing embankments and fills as indicated and specified.
  - 3. Construct embankments of compacted materials.
  - 4. Grade surfaces to meet finished grades indicated.
  - 5. Immediately notify the Engineer if suspected hazardous materials are encountered and cease operations in that part of work.
  - 6. Immediately stop work and notify the Engineer if historical artifacts or human remains are encountered.
  - 7. Remove boulders within the excavation limits.

##### 1.02 RELATED WORK

- A. Section 01560 – Special Controls
- B. Section 02100 – Clearing and Grubbing
- C. Section 02222 – Excavation and Backfill for Utilities and Structures
- D. Section 02500 – Landscaping
- E. Division 3

## 1.03 REFERENCES

### A. American Society for Testing and Materials (ASTM) Publications:

1. C33: Specification for Concrete Aggregates.
2. C136: Sieve Analysis of Fine and Coarse Aggregates.
3. D421: Practice for Dry Preparation of Soil Samples for Particle Size Analysis and Determination of Soil Constants.
4. D422: Test Method for Particle-Size Analysis of Soils.
5. D1140: Test Method for Amount of Material in Soils Finer than the No. 200 (75 Fm) Sieve.
6. D1556: Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
7. D1557: Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
8. D2167: Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
9. D2922: Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods. (Shallow Depth).
10. D3017: Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
11. D4318: Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
12. D4718: Practice for Correction of Unit Weight and Water Content for Soils Containing Oversized Particles.
13. D4944: Test Method for Field Determination of Water (Moisture) Content of Soil by the Calcium Carbide Pressure Tester Method.
14. D4959: Test Method for Field Determination of Water (Moisture) Content of Soil by Direct Heating Method.
15. D5080: Test Method for Rapid Determination of Percent Compaction.

### B. Occupational Safety and Health Administration (OSHA) Standards and Regulations contained in Title 29: Subpart P - Excavations, Trenching and Shoring.

#### 1.04 DEFINITIONS

- A. Percentage of compaction is defined as the ratio of the field dry density, as determined by ASTM D1556 to the maximum dry density determined by ASTM D1557 Procedure C, multiplied by 100.
- B. Proof Roll: Compaction with a minimum of 4 passes of a vibratory steel drum or rubber tire roller. Vibratory plate compactors shall be used in small areas where vibratory steel drum or rubber tire roller cannot be used.
- C. Acceptable Material: Material which does not contain organic silt or organic clay, peat, vegetation, wood or roots, stones or rock fragments over 6-inch [15 cm] in diameter, porous biodegradable matter, loose or soft fill, excavated pavement, construction debris, or refuse. Stones or rock fragments shall not exceed 40 percent by weight of the backfill material.
- D. Unacceptable Materials: Materials that do not comply with the requirements for the acceptable material or which cannot be compacted to the specified or indicated density.

#### 1.05 SUBMITTALS

- A. Submit the following in accordance with Section 01300 - Submittals:
  - 1. Submit an excavation, backfilling, and filling plan at least two weeks prior to start of any earth moving activities. The review will be only for the information of the Owner and third parties for an overall understanding of the project relating to access, maintenance of existing facilities and proper utilization of the site. The Contractor shall remain responsible for the adequacy and safety of the means, methods and sequencing of construction. The plan shall include, but not be limited to the following items:
    - (a) Detailed sequence of work.
    - (b) General description of construction methods.
    - (c) Numbers, types, and sizes of equipment proposed to perform excavation and compaction.
    - (d) Details of dust control measures.
    - (e) Proposed locations of stockpiled excavation and/or backfill materials.
    - (f) Proposed surplus excavated material off-site disposal areas and required permits.

- (g) Details of erosion and sedimentation control measures which will prevent erosion and sedimentation during the earth moving activities.
- 2. Laboratory testing results of gradation and moisture-density relationship. Submittal shall include specific location of the source and the date when sample was taken.
- 3. During Construction, submit written confirmation of fill lift thickness, in-place soil moisture content, and percentage of compaction to the Engineer before placing the next lift or constructing foundations.

#### 1.06 QUALITY ASSURANCE AND CONTROL

- A. Provide in accordance with Section 01400 and as specified.
- B. The Contractor shall be solely responsible for making all excavations in a safe manner. All excavation, trenching, and related sheeting, bracing, etc. shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926 Subpart P) and State requirements. Where conflict between OSHA and State regulations exists, the more stringent requirements shall apply.
- C. Do not excavate, construct embankments, or fill until all the required submittals have been reviewed by the Engineer.
- D. Formulate excavation, backfilling, and filling schedule and procedures to eliminate possibility of undermining or disturbing foundations of partially and completed structures, pipelines and embankments or existing structures and pipelines.
- E. Field and Laboratory Testing and Inspections:
  - 1. Field and laboratory testing shall be performed by an independent Testing Laboratory.
  - 2. The Testing Laboratory shall be selected by the City. The first round of tests will be paid from the "Cost Allowance for Density Testing".
  - 3. The location of tests shall be mutually acceptable to Testing Laboratory and the Engineer or as directed by the Engineer.
  - 4. In the event compacted material does not meet specified in-place density, recompact material and retest this area until specified results are obtained. All costs shall be borne by the Contractor at no additional cost to the City.
  - 5. The Testing Laboratory shall perform inspections at least once daily to confirm lift thickness and compaction effort for entire fill area.

F. Methods of Field Testing

1. In-Place Density: ASTM D1556, ASTM D2167, or ASTM D2922.
2. In-Place Moisture Content: ASTM D3017, ASTM D4944, or ASTM D4959.

G. Material Testing Frequency: The following testing frequencies are minimum required for all structural and non-structural fill, grading and embankment.

1. Field In-Place Density and Moisture Content - Screened gravel and crushed stone shall be compacted as specified and indicated. For other backfill and fill materials, minimum test frequency shall be as follows, and no less than one test per:
  - (a) Trenches under structures, foundation preparation, or roadways subbase: Every 500' lin. ft. [150 m.] per lift.
  - (b) Trenches in areas without structures or roadways: Every 1000 lin. ft. [300 m.] per alternate lift.
  - (c) Paved Roadways: Every 200-lin. ft. [60 m.] per lift
  - (d) Paved Areas: 3,500 sq. ft. [350 sq. m.] per lift.
  - (e) Under each structure: 1,000 sq. ft. [100 sq. m.] per lift.
  - (f) Around each structure: 1,500 sq. ft. [150 sq. m.] per lift.
  - (g) Embankment Fills: 10,000 sq. ft. [1000 sq. m.] per lift.
2. Moisture Density - One per source, except for screened gravel and crushed stone. Repeat the moisture density test for every 5,000 cubic yard of material use, and whenever visual inspection indicates a change in material gradation as determined by the Engineer.
3. Gradation Analysis - A minimum of one per source and for each moisture density test and whenever visual inspection indicates a change in material gradation.

H. Construction Tolerances

1. Construct finished surfaces to plus or minus 1 inch [2.5 cm] of the elevations indicated.
2. Grade cut and fill areas to plus or minus 0.20 foot [6.0 cm] of the grades indicated.



3. Complete embankment edges to plus or minus 6 inches [15 cm] of the slope lines indicated.
  4. Provide the Engineer with adequate survey information to verify compliance with above tolerances.
- I. Cut pavement with a saw or pneumatic tools to prevent damage to remaining pavement without extra compensation. Where pavement is removed in large pieces, dispose of pieces before proceeding with excavation.
  - J. Pipes, drains, and other utilities may exist in certain locations not indicated on drawings. No attempt has been made to show all services. Completeness or accuracy of information given is not guaranteed. Contractor is to conform with all Sunshine One Call (811) requirements.
  - K. Dig test pits considered as incidental to the normal excavation as indicated and specified in this Section, at no additional compensation.
  - L. Carefully support and protect from damage, existing pipes, poles, wires, fences, curbs, property line markers, and other structures, which the Engineer determines must be preserved in place without being temporarily or permanently relocated. Should such items be damaged, restore without compensation therefore, to at least as good condition as that in which they were found immediately before the work was begun.
  - M. Whenever certain existing structures, as described below, are encountered, and the Engineer so directs, change the location, remove, and later restore, or replace such structures, or assist the Owner in doing so.
  - N. In removing existing pipes or other structures, include for payment only those new materials which are necessary to replace those unavoidably damaged as determined by the Engineer.
  - O. The preceding two paragraphs apply to pipes, wires, and other structures which meet the following: (a) are not indicated on the drawings or otherwise provided for, (b) encroach upon or are encountered near and substantially parallel to the edge of the excavation, and (c) in the opinion of the Engineer, will impede progress to such an extent that satisfactory construction cannot proceed until they have been changed in location, removed (to be later restored), or replaced.
  - P. Restore existing property or structures as promptly as practicable.
  - Q. If material unacceptable for foundation (in the opinion of the Engineer) is found at or below the grade to which excavation would normally be carried in accordance with the drawings and/or specifications, remove such material to the required width and depth

as directed by the Engineer and replace it with screened gravel, select borrow, or concrete.

- R. Do not remove excavation materials from the site of the work or dispose of except as directed or permitted by the Engineer.
- S. Haul away and dispose of surplus excavated materials at locations directed by the Engineer at no additional cost to the Owner.
- T. During progress of work, conduct earth moving operations and maintain work site so as to minimize the creation and dispersion of dust. Furnish and spread calcium chloride if the Engineer decides that it is necessary for more effective dust control.
- U. Provide suitable and safe bridges and other crossings where required for accommodation of travel, and to provide access to private property during construction, and remove said structures thereafter.

#### 1.07 SITE CONDITIONS:

- A. Subsurface Conditions: Refer to Front End documents and Geotechnical Report.
- B. Refer to Geotechnical Report provided specifically for the project. The Contractor is responsible for investigating existing soil conditions as the Geotechnical Report does not assure all subsurface site conditions are represented.

### PART 2 - PRODUCTS

#### 2.01 GENERAL

- A. Use only acceptable materials from excavations or borrows.
- B. Provide Fine Aggregate conforming to ASTM C33.

## 2.02 EQUIPMENT

- A. The compaction equipment shall be selected by the Contractor and shall be capable of consistently achieving the specified compaction requirements. The selected compaction equipment shall meet the following minimum requirements:
  - 1. Manually operated vibratory plate compactors weighing no less than 200 pounds [90 kg] with vibration frequency no less than 1600 cycles per minute.
  - 2. Vibratory steel drum or rubber tire roller weighing at least 12,000 pounds [5450 kg].

## PART 3 - EXECUTION

### 3.01 SITE MAINTENANCE

- A. Roadway and Site Leveling: Grade roadway and site as to maintain them in a level unrutted condition and to eliminate puddling of surface and subsurface water.

### 3.02 EXCAVATION

- A. Execution of any earth excavation shall not commence until the related excavation support systems and backfill and fill materials submittals are reviewed by the Engineer and all Engineer's comments satisfactorily addressed.
- B. Carry out program of excavation, and excavation support systems to eliminate possibility of undermining or disturbing foundations of existing structures or of work previously completed under this contract.
- C. Excavate to widths that give suitable room for building structures or laying and jointing piping.
- D. Do not plow, scrape or dig by machinery near to finished subgrade in a manner that would result in disturbance of subgrade.
- E. Excavate to lines and grades indicated in an orderly and continuous program.
- F. Establish limits of excavation to allow adequate working space for installing forms and for safety of personnel.
- G. Excavate to elevations indicated, or deeper, as directed by the Engineer, to remove unacceptable material.
- H. Exercise care to preserve material below and beyond the lines of excavations.

- I. Place excavated material at the approved stockpile locations and in no case closer than 3 feet [90 cm] from edge of excavations to prevent cave-ins of bank slides.
- J. Regard small, less than one cubic yard, boulders, rock fragments, and concrete encountered during excavation as a normal part of in-place soils and not included for payment as rock.

### 3.03 SEPARATION OF EXCAVATED MATERIALS FOR REUSE

- A. Remove only existing pavement that is necessary for prosecution of work.
- B. Carefully remove loam and topsoil from excavated areas. Store separately for further use or furnish equivalent loam and topsoil as directed.
- C. Carefully remove acceptable material from excavated areas and store separately for further use as backfill material.

### 3.04 TRENCH EXCAVATION

- A. When pipe is to be laid in gravel bedding or concrete cradle, excavate trench by machinery to, or just below designated subgrade. If material remaining at bottom of trench is disturbed, recompaction shall be required.
- B. When pipe is to be laid directly on bottom of trench, do not excavate lower part of trenches by machinery to subgrade. Remove remainder of material to be excavated just before placing of pipe by use of hand tools. Form a flat or shaped bottom, true to grade, so pipe will have a uniform and continuous bearing. Support on firm and undisturbed material between joints, except for limited areas where use of pipe slings has disturbed bottom.
- C. Depth and width of trench are to conform with OSHA and Florida Trench Safety Act requirements, whichever are more stringent.

### 3.05 TRENCH EXCAVATION IN FILL

- A. Place and compact material to top of fill or to a minimum height of 1 ft. [30 cm] above top of pipe, whichever is less, when pipe is to be laid in embankment or other recently filled material. Take particular care to ensure maximum consolidation of material under pipe location. Excavate pipe trench as though in undisturbed material.

### 3.06 EXCAVATION NEAR EXISTING STRUCTURES

- A. Discontinue digging by machinery when excavation approaches pipes, conduits, or other underground structures. Continue excavation by use of hand tools. Include such manual excavation in work to be done when incidental to normal excavation and under items involving normal excavation.

- B. Excavate test pits when determination of exact location of pipe or other underground structure is necessary for doing work properly.

### 3.07 REMOVAL OF SUBSURFACE OBSTRUCTIONS

- A. Remove indicated subsurface structures and related obstructions to extent shown.
- B. Promptly notify the Engineer when any unexpected subsurface facilities are encountered during excavation such as utility lines and appurtenances, walls and foundations.

### 3.08 UNAUTHORIZED EXCAVATION

- A. When the bottom of any excavation for structures is taken out beyond limits indicated or specified, backfill, with screened gravel and crushed stone wrapped with non-woven geotextile fabric or with 1,500 psi (10 Mpa) concrete.

### 3.09 REUSE AND DISPOSAL OF SURPLUS EXCAVATED MATERIALS

- A. Reuse surplus acceptable excavated materials for backfill; deposit neatly and grade so as to make or widen fills, flatten side slopes, or fill depressions; or legally dispose off-site; all as directed or permitted and without additional compensation.

### 3.10 SUBGRADE PREPARATION AND PROTECTION

- A. Remove loam and topsoil, loose vegetable matter, stumps and large roots from areas upon which embankments will be built or material will be placed for grading. Shape subgrade as indicated on drawings, and prepare by forking, furrowing, or plowing so that the first layer of new material placed thereon will be well bonded to it.
- B. As directed by the Engineer, over excavate unacceptable materials below the foundation subgrade or two feet below the pipe to be installed. Backfill the over excavation with compacted screened gravel or crushed stone wrapped with nonwoven geotextile fabric. In no case shall the screened gravel be placed directly on the exposed subgrade prior to placing the geotextile fabric.
- C. Proof roll the foundation subgrade prior to backfilling and filling operation or placing foundation concrete.
- D. Proof roll the pipe trench foundation subgrade prior to backfilling and filling operation or placing soil-supported pipeline.
- E. Utilize excavating equipment equipped with a toothless or smooth edged, excavating bucket to expose the pipe trench foundation subgrade to avoid disturbance of the bearing surface. Tamp the exposed subgrade with the excavating bucket prior to backfilling and filling operation or placing soil-supported pipeline.

### 3.11 CARE AND RESTORATION OF PROPERTY

- A. Enclose uncut tree trunks adjacent to work in wooden boxes of such height as may be necessary for protection from injury from piled material, equipment, operations, or otherwise due to work. Operate excavating machinery and cranes of suitable type with care to prevent injury to trees not to be cut and particularly to overhanging branches and limbs.
- B. Cut all branches, limbs, and roots smoothly and neatly without splitting or crushing. Neatly trim, cut the injured portions and cover with an application of grafting wax or tree healing paint as directed.
- C. Protect cultivated hedges, shrubs, and plants which might be injured by the Contractor's operations by suitable means or dig up and temporarily replant and maintain. After construction operations have been substantially completed, replant in original positions and care for until growth is reestablished. If cultivated hedges, shrubs, and plants are injured to such a degree as to affect their growth or diminish in their beauty or usefulness, replace by items of equal kind and quality existing at the start of the work.
- D. Do not use or operate tractors, bulldozers, or other power-operated equipment on paved surfaces when their treads or wheels of which are so shaped as to cut or otherwise damage such surfaces.
- E. Restore surfaces damaged by the Contractor's operations to a condition at least equal to that in which they were found immediately before work commenced. Use suitable materials and methods for such restoration.

### 3.12 BACKFILLING - GENERAL

- A. Do not place, spread, roll or compact fill material during unfavorable weather conditions. If interrupted by heavy rain or other unfavorable conditions, do not resume until ascertaining that the moisture content and density of the previously placed soil are as specified.
- B. Do not use puddling, ponding or flooding as a means of compaction.

### 3.13 MATERIAL PLACEMENT AND COMPACTION REQUIREMENTS

- A. Select Borrow, and Fine Aggregate
  - 1. Dump and spread in layers not to exceed 8-in. [20 cm] uncompacted thickness.
  - 2. Compact, fill and backfill under structure and bedding for pipes (from below pipe to spring line) as indicated but to not less than 95 percent. Compact to not

less than 95 percent in other areas unless otherwise indicated, and not less than 98 percent under roadways.

- B. Screened Gravel and Crushed Stone
  - 1. Dump and spread in layers not to exceed 8-in. [20 cm] uncompacted thickness.
  - 2. Compact using self-propelled vibratory steel drum or rubber tire rollers with a minimum of 4 passes in directions perpendicular to one another in open areas. In small areas, use manually operated vibratory plate compactors with a minimum of 4 passes.
- C. Bank-run Gravel and Acceptable materials for use as non-structural fill
  - 1. Dump and spread in layers not to exceed 12-in. [30 cm] uncompacted thickness.
  - 2. Compact to not less than 95 percent unless otherwise indicated.
- D. Backfilling and filling operation shall be suspended in areas where tests are being made until tests are completed and the Testing Laboratory has advised the Engineer that adequate densities are obtained.

#### 3.14 STRUCTURAL FILL AND BACKFILL UNDER STRUCTURES

- A. Provide in accordance with Section 02222.
- B. Compact fill and backfill under structures and pavements with screened gravel, crushed stone, select borrow, or fine aggregate as specified and indicated.

#### 3.15 NON-STRUCTURAL BACKFILL AROUND STRUCTURES

- A. Provide in accordance with Section 02222.
- B. Use acceptable materials for non-structural backfill around structures and compacted as specified and indicated.
- C. Conduct hydraulic testing as soon as practicable after structures are constructed and other necessary work has been done. Start backfilling promptly after completion of tests.
- D. Deposit material evenly around structure to avoid unequal soil pressure.
- E. Do not place backfill against or on structures until they have attained sufficient strength to support the loads (including construction loads) to which they will be subjected, without distortion, cracking, or other damage.

3.16 BACKFILLING PIPE TRENCHES

- A. Provide in accordance with Section 02222.

3.17 MATERIAL FOR FILLING AND EMBANKMENTS

- A. Use acceptable materials for filling and building embankments unless otherwise indicated.

3.18 PLACING AND COMPACTING EMBANKMENT MATERIAL

- A. Compact fill material as specified and indicated.
- B. Perform fill operation in an orderly and systematic manner using equipment in proper sequence to meet the specified compaction requirements.
- C. Place fill on surfaces which are free of unacceptable materials.
- D. Begin filling in lowest section of work area. Grade surface of fill approximately horizontal but provide with sufficient longitudinal and transverse slope to allow for runoff of surface water from every point.
- E. Conduct filling so that no obstruction to drainage from other sections of fill area is created at any time.
- F. Reduce moisture content of fill material, if necessary, in source area by working it over under warm and dry atmospheric conditions. A large disc harrow with two to three-foot diameter disks may be required for working soil in a drying operation.
- G. Compact uniformly throughout. Keep surfaces of fill reasonably smooth and free from humps and hollows which would prevent proper and uniform compaction. Do not permit hauling equipment to follow a single track on the same layer but direct equipment to spread out to prevent over compaction in localized areas. Take care in obtaining thorough compaction at edges of fill.
- H. Slightly slope surface of fill to ensure drainage during periods of wet weather. Do not place fill while rain is falling or after a rainstorm until the Engineer considers conditions satisfactory. During such periods and upon suspension of filling operations for any period in excess of 12 hours, roll smooth the surface of fill using a smooth wheel static roller to prevent excessive absorption of rainfall and surface moisture. Prior to resuming compaction operations, remove muddy material off surface to expose firm, compacted material, as determined by the Engineer.
- I. When fill is placed against an earlier fill or against in-situ material under and around structures, including around piping beneath structures or embankments, slope junction between two sections of fill, 1 vertical to 1.5 horizontal. Bench edge of existing fill 24-in.



[60 cm] to form a serrated edge of compact stable material against which to place the new fill. Ensure that rolling extends over junction between fills. Follow OSHA standards for variations in soil types and slope requirements.

- J. When fill is placed directly upon another older fill, clean surface thoroughly of debris and remove any loose material. Then proof roll the entire old surface.
- K. After spreading each loose lift to the required thickness and adjusting its moisture content as necessary, roll with sufficient number of passes to obtain the required compaction. One pass is defined as the required number of successive trips which by means of sufficient overlap will insure complete coverage and uniform compaction of an entire lift. Do not make additional passes until previous pass has been completed.
- L. In case material of any fill sinks and weaves under roller or under hauling units and other equipment, required degree of compaction is not being obtained. Reduce the moisture content. If such sinking and weaving produces surface cracks, suspend operations on that part of the embankment until it becomes sufficiently stabilized. Ideal condition in fill is that attained when the entire fill below the surface being rolled is so firm and hard as to show only the slightest weaving and deflection as roller passes. Spread out rolling operations over the maximum practicable area to minimize condition of sinking and weaving.
- M. If because of defective workmanship, compaction obtained over any area is less than that required, remedy condition at no cost to Owner. If additional rolling or other means fail to produce satisfactory results, remove material in that area down to a level of satisfactory density. Perform removal, replacement, and rerolling without additional compensation

### 3.19 COMPACTION CONTROL OF BACKFILL, FILL, AND EMBANKMENT

- A. Compact to density specified and indicated for various types of material. Control moisture content of material being placed as specified or if not specified, at a level slightly lower than optimum.
- B. The soil Testing Laboratory shall provide inspection during filling or backfilling operations to ensure compaction of screened gravel or crushed stone and record compaction equipment in use.
- C. Moisture control may be required either at the stockpile area, pits, or on embankment or backfill. Increase moisture content when material is too dry by sprinkling or other means of wetting uniformly. Reduce moisture content when material is too wet by using ditches, pumps, drainage wells, or other devices and by exposing the greatest possible area to sun and air in conjunction with harrowing, plowing, spreading of material or any other effective methods.

### 3.20 ALLOWANCE FOR SHRINKAGE

- A. Build embankments or backfill to a height above finished grade which will, in the opinion of the Engineer, allow for the shrinkage or consolidation of material. Initially, provide at all points, an excess of at least one percent of total height of backfill measured from stripped surface to top of finished surface.
- B. Supply specified materials and build up low places as directed, without additional cost if embankment or backfilling settles so as to be below the indicated level for proposed finished surface at any time before final acceptance of the work.

### 3.21 RESTORATION

- A. Provide finished grading in accordance with Section 02260.
- B. Restore all green space areas disturbed by construction operations in accordance with Section 02500, Landscaping, and Section 02930, Sodding.

### 3.22 CONTRACT CLOSEOUT

- A. Provide in accordance with Section 01700.

END OF SECTION

## SECTION 02220

### EXCAVATION, BACKFILL AND COMPACTION

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

- A. The work included under this section consists of excavating, grading, backfilling and compacting for general construction.
- B. For Excavation and Backfill for Utilities and Structures refer to Section 02222.
- C. Excavation shall include the removal of all material of whatever nature encountered, including all obstructions of any nature that would interfere with the proper execution and completion of the work. The removal of said material shall conform to the lines and grades indicated.
  - 1. When excavations are to be made in paved surfaces, the pavement shall be saw-cut ahead of the excavation by means of suitable sharp tools to provide a uniform sharp edge, with minimum disturbance of remaining material.

##### 1.02 PROTECTION

- A. Excavations
  - 1. Notify Engineer of unexpected subsurface conditions and discontinue work in affected area until notification to resume work.
  - 2. Provide and maintain adequate barricades and warning lights to protect open trenches.
  - 3. All trenches shall be fully backfilled at the end of each day.
- B. Existing Utilities
  - 1. Those existing utilities that are to be retained shall be protected, and if damaged, shall be repaired by the Contractor at no additional cost to the City.
  - 2. The Contractor shall notify CALL SUNSHINE at their toll-free number 1-800-432-4770 and/or each utility individually, forty-eight (48) hours prior to any excavation.
- C. Contractor shall exercise care during excavation in areas of environmental sensitivity and advise the project engineer if any hazardous material is encountered.

## PART 2 - PRODUCTS

### 2.01 MATERIAL

- A. Material shall comply with the latest Section 125 of the FDOT specifications for Road and Bridge Construction, the drawings and other contract documents.
- B. Material used for backfilling shall be select granular material, free from grass, roots, brush or other vegetation, rubbish, clay, marl, lumps of broken paving or boulders having maximum dimension larger than six (6") inches. Unsuitable material shall be removed from the site at the Contractor's expense away from the project.
- C. Material coming within one foot (1'-0") of any structure or pipe shall be free of rocks or unbroken masses of earthy material having maximum dimension larger than two inches (2").
- D. If, in the Engineer's opinion, material is unsuitable for backfill purposes, imported material having sand equivalent value of no less than twenty percent (20%) shall be used for this portion of the trench backfill.
- E. Suitable for Fills: Material classified as A-1, A-3, or A-2-4 under AASHTO M 145, free from vegetation and organic material, and with not more than 10 percent by weight passing the No. 200 sieve.
- F. Unsuitable for Fills: Materials classified as A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 and A-8 under AASHTO M 145.
- G. Select Material: Suitable material containing no pieces or rock fragments larger than will pass a 3-inch diameter ring.

## PART 3 - EXECUTION

### 3.01 EXCAVATION

- A. Work shall comply with the latest Section 120 of the FDOT Standard Specifications for Road and Bridge Construction.
- B. Trench and Excavation
  - 1. Work shall comply with the latest Section 125 of the FDOT Standard Specifications for Road and Bridge Construction.
  - 2. The maximum amount of open trench permitted in any one (1) location shall be one hundred feet (100'), unless the trench is located within a State of County

right-of-way, in which case the requirement would defer to the more stringent of those agencies.

3. All trenches shall be fully backfilled at the end of each day or, in lieu thereof, when approved by the Engineer, heavy steel plate adequately braced and capable of supporting vehicular traffic may be used in certain locations where it is impractical to backfill at the end of each day.

C. Over-excavation When Ordered:

1. Trenches shall be over-excavated beyond the depth shown, when ordered by the Engineer. Such over-excavation shall be to the depth ordered.
2. The trench shall be refilled to the grade of the bottom of the pipe with either selected granular material obtained from the excavation, sand or crushed rock, at the option of the Engineer. When crushed rock bedding is ordered, the material shall be a well-graded material with maximum particle size of three-quarters of an inch (3/4").
3. Bedding material shall be placed in layers, brought to optimum moisture content, and compacted to ninety-five percent (95%) of maximum density.

D. Over Excavation not Ordered, Specified or Shown:

1. Any over-excavation carried below the grade ordered, specified or shown, shall be refilled to the required grade with suitable selected granular material.
2. Refilled material shall be moistened as required and compacted to ninety-five percent (95%) of maximum density.
3. Work required due to over excavation when not ordered shall be performed by the Contractor at his own expense.

E. Disposal of Excess Excavated Material:

1. The Contractor shall remove and dispose of all excess excavated material at his own expense, in accordance with the General Conditions.
2. All excess suitable material that cannot be used as fill on the site(s), is to remain property of the City and shall be removed by the Contractor to a disposal site(s) as directed by Engineer.
3. All materials suitable for use as backfill shall be hauled to and used in areas where not enough suitable material is available from the excavation.
4. Unsuitable material such as trees, shrubs, etc. shall be the Contractor's responsibility to load, haul and provide a disposal site.

### 3.02 BACKFILLING

- A. Work shall comply with the latest Section 125 of the FDOT Specifications for Road and Bridge Construction, the drawings, and all other contract documents.
- B. Backfill shall not be dropped directly upon any structure or pipe.
- C. Backfill shall not be placed around or upon any structure until the concrete has attained sufficient strength to withstand the loads imposed.
- D. Backfill around and beneath structures, and beneath paved areas:
  - 1. Except where otherwise specified for a particular structure or ordered by the Engineer, backfill placed around and beneath structures, and beneath paved areas, shall be placed in horizontal layers not to exceed eight inches (8") in thickness, as measured before compaction.
  - 2. The backfill shall be brought up evenly with each layer moistened and compacted by mechanical means to ninety-five percent (95%) of maximum density.

### 3.03 COMPACTION TESTING

- A. Compaction testing specified herein are expressed as a percentage of maximum density. Maximum density shall be determined by AASHTO T-180, Method D.
- B. The City shall retain the services of an independent materials testing laboratory to perform laboratory and field density tests which, in the opinion of the Engineer, are necessary to establish compliance with the compaction requirements of these specifications. The first round of tests will be paid from the "Density Testing Allowance".
- C. The costs of subsequent recompaction and retesting due to not achieving the required minimum compaction shall be borne by the Contractor at no additional cost to the City.
- D. Compaction density tests shall be scheduled by the Engineer. Contractor shall give notice to the Engineer 24 hours in advance of required density tests.
- E. All tests which fail to meet minimum compaction requirements shall be paid by the Contractor. All tests shall be performed in the presence of the Engineer or his representative.
- F. Trench backfill which does not comply with the specified densities, as indicated by such tests, shall be reworked and recompacted until the required compaction is secured, at no additional cost to the City.

END OF SECTION

## SECTION 02222

### EXCAVATION AND BACKFILL FOR UTILITIES AND STRUCTURES

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENT

- A. Excavate, grade, and backfill as required for underground piping systems and structures including appurtenances as shown on the Drawings and specified herein.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01300 – Submittals
- B. Section 01560 – Special Controls
- C. Section 02140 – Dewatering
- D. Section 02160 – Temporary Excavation Support Systems
- E. Section 02210 – Earth Excavation, Backfill, Fill and Grading
- F. Section 02220 – Excavation, Backfill and Compaction
- G. Division 3

##### 1.03 QUALITY CONTROL

- A. Codes and Standards: Excavation and backfill work shall be performed in compliance with applicable codes, standards and requirements of governing authorities having jurisdiction in the area.
- B. Testing and Inspection Service: An independent testing laboratory will be retained by the City to do appropriate testing as described in Section 01400, Testing and Inspection. The Contractor shall schedule its work so as to permit a reasonable time for testing before placing succeeding lifts and shall keep the laboratory informed of his progress. A minimum of 48 hours of notice shall be provided to the testing laboratory to mobilize its activities.

##### 1.04 SUBMITTALS

- A. General: Submit information and samples to the Engineer for review as specified herein in accordance with Section 01300, Submittals.

- B. Dewatering: See Section 02140 for Dewatering. If the quantity or nature of water withdrawn requires approval/permits from regulatory agencies, the Contractor shall procure such permits at its expense and submit copies to the Engineer and Owner before commencing the work. The Contractor will not be granted contract time extensions due to dewatering permit processing delays or sampling requirements.
- C. Bedding and Backfill Materials: The Contractor shall notify the Engineer of the off-site sources of bedding and backfill materials, and submit to the Engineer a representative sample weighing approximately 50 lbs. The sample shall be delivered to a location on site determined by the Engineer.
- D. Sheet piling System: Drawings of the sheet piling system and design computations shall be submitted to the Engineer; however, the review of these drawings shall in no way relieve the Contractor of the responsibility to provide a safe and satisfactory sheet piling and shoring system. Sheet piling and shoring shall be designed by the Contractor, and the proposed design shall be sealed by a Professional Engineer registered in the State of Florida. If the Engineer is of the opinion that at any point sufficient or proper supports have not been provided, it may order additional supports put in at the Contractor's expense.

#### 1.05 SUBSURFACE INFORMATION

- A. The Contractor shall be responsible for anticipating groundwater and understanding soil conditions and shall provide positive control measures as required. Such measures shall ensure stability of excavations, groundwater pressure control, prevention of tanks, pipes, and other structures from being lifted by hydrostatic pressures, and avoiding the disturbance of subgrade bearing materials.

#### 1.06 TRENCH SAFETY ACT COMPLIANCE

- A. The Contractor by signing and executing the contract is, in writing, assuring that it will perform any trench excavation in accordance with the Florida Trench Safety Act, Section 553.60 et. seq. The Contractor has further identified the separate item(s) of cost of compliance with the applicable trench safety standards as well as the method of compliance as noted in the "Bid Forms" Section of the Contract front-end documents.
- B. The Contractor acknowledges that this cost is included in the applicable items of the Proposal and Contract and in the Grand Total Bid and Contract Price.
- C. The Contractor is, and the City and Engineer are not, responsible to review or assess the Contractor's safety precautions, programs or costs, or the means, methods, techniques or technique adequacy, reasonableness of cost, sequences or procedures of any safety precaution, program or cost, including but not limited to, compliance with any and all requirements of Florida Statute Section 553.60 et. seq. cited as the "Trench Safety Act". The Contractor is, and the City and Engineer are not, responsible to determine if any



safety or safety related standards apply to the project, including but not limited to, the "Trench Safety Act".

#### 1.07 PROTECTION OF PROPERTY AND STRUCTURES

- A. The Contractor shall, at its own expense, sustain in place and protect from direct or indirect injury, all pipes, poles, conduits, walls, buildings, and all other structures, utilities, and property in the vicinity of its Work. Such sustaining shall be done by the Contractor. The Contractor shall take all risks attending the presence or proximity of pipes, poles, conduits, walls, buildings, and all other structures, utilities, and its Work. It shall be responsible for all damage, and assume all expenses, for direct or indirect injury and damage, caused by its Work, to any such pipe, structures, etc., or to any person or property, by reason of injury to them, whether or not such structures, etc., are shown on the Drawings.
- B. Barriers shall be placed at each end of all excavations and at such places as may be necessary along excavations to warn all pedestrian and vehicular traffic of such excavations. Barricades with flashing lights shall also be placed along excavation from sunset each day to sunrise of the next day until such excavation is entirely refilled, compacted, and paved. All excavations shall be barricaded where required to meet OSHA, local and Federal Code requirements, in such a manner to prevent persons from falling or walking into any excavation within the site fenced property limits.

#### 1.08 EXISTING UTILITIES

- A. Locate existing underground utilities in the areas of work. Test pits and hand excavation in critical areas will be required prior to initiating work.
- B. All existing utilities including piping, electrical conduits, electric duct banks and telephone cables that are shown on the Contract Drawings to be relocated, shall be relocated prior to initiating earth work. Excavation and backfill for relocation of existing utilities shall conform to the requirements of Section 02222, Excavation and Backfill for Utilities and Structures. The Contractor shall coordinate relocation of utilities with utility companies having jurisdiction in the area. Should unknown or incorrectly identified piping or other utilities be encountered during excavation, the Contractor shall consult the City, Engineer and Owner of such piping/utility for directions.
- C. The Contractor shall cooperate with the City and utility companies in keeping respective services and facilities in operation.

### PART 2 - PRODUCTS

#### 2.01 BEDDING MATERIAL

- A. Bedding materials shall be furnished from acceptable off-site sources. The Contractor shall submit to the Engineer the sources of each material for review in accordance with Section 01300, Submittals.

- B. Crushed stone (or drainfield limerock) shall be used as bedding material for piping (except for copper pipe) and/or manholes as shown on the Standard Details when the installation is below the ground water table elevation. Crushed stone shall consist of hard, durable, sub-angular particles of proper size and gradation, and shall be free from organic material, wood, trash, sand, loam, clay, excess fines, and other deleterious materials.

1. For pipe diameters less than 24 inches, the stone shall conform to the requirements of ASTM C 33, Size No. 57 (3/4-inch rock) and be graded within the following limits:

<u>Sieve Size</u>	<u>Percent Finer by Weight</u>
1-½ inch	100
1 inch	95 - 100
½ inch	25 - 60
No. 4	0 - 10
No. 8	0 – 5

2. For bedding of 24 inch and larger diameter pipe, the stone shall conform to the requirements of ASTM C 33 and be graded within the following limits:

<u>Sieve Size</u>	<u>Percent Finer by Weight</u>
5/8 inch	100
1/2 inch	40 – 100
3/8 inch	15 - 45
No. 10	0 – 5

- C. Sand shall be used for bedding pipe when installed under dry trench conditions, or above the ground water table. Sand shall also be used for bedding copper pipe under all conditions. Sand shall be dry, screened, graded sand with 100 percent passing a 3/8-inch sieve and not more than 5 percent passing a No. 200 sieve.
- D. Limerock screenings, sand or other fine material shall not be used for bedding.
- E. All pipe bedding material shall be new, unless otherwise approved by the Engineer. Existing pipe bedding material may not be used.

## 2.02 SELECT BACKFILL

- A. Select Backfill: Select backfill shall be clean sandy material passing through a 3/4-inch sieve as select backfill material.

## 2.03 GENERAL BACKFILL

- A. All other backfill (general backfill) placed above the select backfill shall pass through a 6-inch ring. General backfill shall contain no more than 10 percent organics. General backfill used under roadways shall be compatible with the materials and compaction specified under Section 02510, Asphaltic Concrete Pavement and 02526, Concrete Pavement, Curb and Walkway.

## 2.04 STRUCTURAL BACKFILL

- A. Fill material shall be non-cohesive, non-plastic, granular mixture of local clean sand or local clean sand and limerock free from vegetation, organic material, muck or deleterious matter. Material shall conform to AASHTO-2 gradation with no more than ten (10) percent by weight passing the No. 200 sieve. All rock or hard material shall pass through a 3-inch diameter ring. Broken Portland cement or asphaltic concrete shall not be considered an acceptable fill material. Fill material containing limerock shall have sufficient sand to fill the voids in the limerock. Material placed in the upper 6-inches of all backfills or fills shall not contain any stones or rocks larger than 1-inch in diameter. Limits of excavation and fill shall be as defined on the Drawings. All structural fill materials shall be obtained from off-site sources.

## 2.05 EXCAVATABLE FLOWABLE FILL

- A. Excavatable flowable fill is called for on the Drawings where limited cover over the existing piping may exist due to conflicts with existing utilities or areas where it is not deemed feasible to go under the existing utility piping. The excavatable flowable fill shall be used in these instances for backfill and shall be placed around the piping conflict such that a layer is formed surrounding both the existing and the proposed or "new" piping with a minimum distance of 3 feet outside of the outer diameters of the intersecting piping and to finished grade elevation. Flowable fill contains a low cementitious content to reduce strength developments for possible future removal. Compressive strength testing shall be governed by the guidelines set forth in ACI Committee Report 229 and shall meet FDOT Standards and Specifications. See Section 03375 – Flowable Fill for additional requirements.

# PART 3 - EXECUTION

## 3.01 EXCAVATION

- A. Examine the areas and conditions under which excavating, filling, and grading are to be performed. Do not proceed with the work until unsatisfactory conditions have been corrected.

- B. Examine and accept existing grade of the project site walkways, pavements, etc., prior to commencement of work and report to Engineer if elevations of existing subgrade substantially vary from elevations shown on the Drawings.
- C. The Contractor shall perform all excavation of every description and of whatever substance encountered, to the dimensions, grades and depths shown on the Drawings, or as required for a proper installation. All excavations shall be made by open cut and in accordance with the Trench Safety Act. All existing utilities such as pipes, poles and structures shall be carefully located, supported, and protected from injury; in case of damage, they shall be restored at the Contractor's expense.
- D. Pipe trenches for piping shall be excavated to a width within the limits of the top of the pipe and the trench bottom so as to provide a clearance on each side of the pipe barrel, measured to the face of the excavation, or sheeting if used, of 8 inches to 18 inches as defined on the Drawings. Where the pipe size exceeds 12 inches, the clearance shall be from 12 inches-to-18 inches. All pipe trenches shall be excavated to a level where suitable material is reached, a minimum of 8 inches below the pipe barrel or that will allow for a minimum of 36 inches of covering unless otherwise indicated on the Drawings.
- E. Ladders or steps shall be provided for and used by workmen to enter and leave trenches as per OSHA standards.
- F. Excavated unsuitable material shall be removed from the site and disposed of by the Contractor. Materials removed from the trenches shall be stored in such a manner that will not interfere unduly with traffic on public roadways and sidewalks and shall not be placed on private property. In congested areas, such materials that cannot be stored adjacent to the trench or used immediately as backfill shall be removed to other convenient places of storage acceptable to the City at the Contractor's expense.
- G. Excavated material that is suitable for use as backfill shall be used in areas where sufficient material is not available from the excavation. Suitable material in excess of backfill requirements shall be disposed off-site at the Contractor's expense and with no additional cost to the Owner.
- H. Unless otherwise indicated on the Drawings, all excavation for structures shall be made in such a manner, and to such widths, as will give ample room for properly constructing and inspecting the structures they are to contain. Excavation shall be made in accordance with the details shown on the Drawings, and as specified herein. Attention shall be given to the proper handling of storm water runoff. The Contractor shall intercept and collect surface run off both at the top and bottom of cut slopes. The excavating equipment shall operate in an organized fashion so as to remove silt from one edge of the excavation to the other so as not to trap silt within the undercut area.

### 3.02 UNAUTHORIZED EXCAVATION

- A. Excavation work carried outside of the work limits required by the Contract Documents shall be at the Contractor's expense and shall be backfilled by the Contractor at its own expense with structural fill, as directed by the Engineer. Where, in the judgment of the Engineer, such over-excavation requires use of lean concrete or crushed stone, the Contractor, at its expense, shall furnish and place such materials.

### 3.03 SHEETING AND BRACING

- A. See Section 02160 Temporary Excavation Support Systems
- B. The term "sheeting" shall represent any type of shoring used to support sides of the excavation. Walls of the excavation shall be kept vertical where open cut is not practical and, if required to protect the safety of workmen, the general public, this or other work or structure, or excavation walls, the excavation shall be properly sheeted and braced for conditions encountered and in conformance with OSHA requirements. Excavation for the structures shall be sufficient to provide a clearance between their outer surfaces and the face of the excavation, sheeting, or bracing, of not less than two feet, unless otherwise indicated on the Drawings. Materials encountered in the excavation, which have a tendency to slough or flow into the excavation, undermine the bank, weaken the overlying strata, or are otherwise rendered unstable by the excavation operation shall be retained by sheeting, stabilization, grouting or other acceptable methods.
- C. Minimum length of embedment below the deepest part of the excavation shall be 0.3 times the depth of excavation being supported or greater depending on the sheeting. The design of the sheeting arrangement shall be the responsibility of the Contractor.
- D. The Contractor shall furnish, place, and maintain sheeting and bracing to support sides of the excavation as necessary to provide safe working conditions in accordance with OSHA requirements, and to protect pipes, structures and other Work from possible damage. Where wood sheeting or certain designs of steel sheeting are used, the sheeting shall be cut off at a level of 2 feet above the top of the installed pipe and that portion below the level shall be left in place. If interlocking steel sheeting is used, it may be removed providing removal can be accomplished without disturbing the bedding, pipe or alignment of the pipe. Any damage to the pipe bedding, pipe or alignment of the constructed utility caused by the removal of sheeting shall be cause for rejection of the affected portion of the work. The City may permit sheeting to be left in place at the request and expense of the Contractor, or the City may order him in writing to leave in place, for the preventing of damage to structures or property. Payment for sheeting ordered to remain in place shall be paid for at a negotiated price.
- E. If the Engineer is of the opinion that at any point sufficient or proper supports, have not be provided, he may order additional supports put in at the Contractor's expense. The Contractor shall be responsible for the adequacy of all sheeting used and for all damage resulting from sheeting and bracing failure or from placing, maintaining, and removing it.

### 3.04 REMOVAL OF WATER

- A. General: It is a basic requirement of these Specifications that excavations shall be free from water before pipe or structures are installed.
  - 1. Removal of groundwater, or dewatering, shall be accomplished in accordance with the requirements of Section 02140, Dewatering.
- B. Disposal: The Contractor shall be responsible to dispose of water from the dewatering operation in accordance with the Contract Documents and shall obtain all necessary permits and conform to all local regulations and codes.

### 3.05 TRENCH STABILIZATION

- A. No claim for extras, or additional payment will be considered for cost incurred in the stabilization of trench bottoms which are rendered soft or unstable as a result of construction methods, such as improper or inadequate sheeting, dewatering or other causes. In no event shall pipe be installed when such conditions exist and the Contractor shall correct such conditions so as to provide proper bedding or foundations for the proposed installation at no additional cost to the City before placing the pipe or structures.

### 3.06 PIPE BEDDING IN DRY TRENCHES

- A. Pipe trenches shall be excavated as described herein. The resulting excavation shall be backfilled with acceptable pipe bedding material, up to the level of the centerline of the proposed pipe barrel. This backfill shall be tamped and compacted to provide a proper bedding for the pipe and shall then be shaped to receive the pipe. Bedding shall be provided under the branch of all fittings to furnish adequate support and bearing under the fitting.
- B. Any over excavation below the levels required for installation of the pipe shall be backfilled with acceptable bedding material, tamped, compacted, and shaped to provide proper support for the proposed pipe, at the Contractor's expense.

### 3.07 BACKFILL

- A. The Contractor shall not backfill trenches until the piping has been inspected and tested in accordance with Section 15995, Pipeline Testing and Disinfection.
- B. Pipelines: Pipeline trenches shall be backfilled to a level 12 inches above the top of the pipe with select backfill. When placed in the dry, such material shall be placed in 9-inch layers, each compacted to the densities specified herein. Only hand operated mechanical compacting equipment shall be used within six inches of the installed pipe.
- C. After the select backfill has been placed as specified above, and after all excess water has completely drained from the trench, general backfilling of the remainder of the trench may proceed. General backfill shall be placed in horizontal layers, the depth of which shall not exceed the ability of the compaction equipment employed, and in no

event shall exceed a depth of 12 inches. Each layer shall be moistened, tamped, puddled, rolled, or compacted to the densities specified herein.

- D. Manholes and Vaults: Any excavation below the levels required for the proper construction of manholes or vaults shall be filled with Class B concrete. The use of earth, rock, sand, or other materials for this purpose will not be permitted.

### 3.08 COMPACTION AND DENSITIES

- A. Compaction of backfill shall be 98 percent of the maximum density where the trench is located under structures or paved areas, and 95 percent of the maximum density elsewhere. Methods of control and testing of backfill construction are:
  - 1. Maximum density of the material in trenches shall be determined by ASTM D 1557.
  - 2. Field density of the backfill material in place shall be determined by ASTM D 1556 or D 2922.
- B. Density Test Locations for Pipelines: The compacted backfill/fill shall be tested for in-place density at the rate of one test location per 200 lineal feet (or fraction thereof) of trench, or as shown on the Drawings or as directed by the Engineer. The density tests shall be taken at the trench bottom and at each location in one-foot intervals beginning from the top of the piping and ending at the final grade. At existing road or pavement crossings, a minimum of two (2) density tests per crossing per lift is required.
- C. Inspection and Testing: As a minimum, an in-place density test will be made in each lift of compacted soil for every 2,500 square feet of area. The Contractor shall coordinate and cooperate with the testing laboratory.
- D. Trench backfill which does not comply with the specified densities, as indicated by such tests, shall be reworked and recompact until the required compaction is secured, at no additional cost to the City. The costs for retesting such Work shall be paid for by the Contractor.

### 3.09 ADDITIONAL EXCAVATION AND BACKFILL

- A. Where organic material, such as roots, muck, or other vegetable matter, or other material which, in the opinion of the Engineer, will result in unsatisfactory foundation conditions, is encountered below the level of the proposed pipe bedding material, it shall be removed to a depth of two feet below the outside bottom of the pipe or to a greater depth as directed by the Engineer and removed from the site. Sheeting shall be installed if necessary, to maintain pipe trenches within the limits identified by the Engineer. The resulting excavation shall be backfilled with suitable backfill material, placed in 12-inch layers, tamped and compacted up to the level of the bottom of the proposed pipe bedding material. Sufficient compaction of this material shall be performed to protect the proposed pipe against settlement. Lean concrete may be used in lieu of backfill when pipe installation is in the wet or at the Contractor's option. Construction shall then proceed in accordance with the provisions herein.

- B. Additional excavation (more than two feet below the pipe) shall be performed when ordered by the Engineer. Where organic or other material is encountered in the excavation, the Contractor shall bring the condition to the attention of the Engineer and obtain his determination as to whether or not the material will require removal, prior to preparing the pipe bedding. In areas where muck is located, the excavation of material up to two feet below the outside bottom of the trench width will be required to be removed and disposed of by the Contractor. The removal and disposal of up to two feet of muck below the pipe trench is considered incidental to the construction and the Work shall be done at no additional cost to the City which also includes replacing the muck with suitable pipe bedding material.

### 3.10 ALTERNATE METHOD OF CONSTRUCTION

- A. Use of This Method: A combination of conditions in the substrate, water table, or method of disposal may be encountered during the course of the work which makes dewatering impossible. When such conditions are encountered, but only after all reasonable means (pumps, well points, etc.) to dewater the excavation have been employed without success, the Contractor, may request to employ the following Alternate Method of Construction. The concurrence of the Engineer and City shall be obtained in writing and shall limit the use of the alternate method of construction to such specific portions of the Work as the Engineer and City shall determine acceptable.
- B. The requirements set forth in other sections of these Specifications shall establish the required standards of construction quality for this work. Use of the alternate method of construction described hereinafter shall in no way be construed as relieving the Contractor of the work. No additional payment will be made to the Contractor for excavation, backfill, sheeting or any cost incurred for Work or materials, or any other costs incurred as a result of the use of this alternate method of construction. The prices established in the Proposal shall be for full payment for the various items of work.
- C. Subject to all the requirements stated herein, including written acceptance of the Engineer, construction will be permitted in accordance with the following specifications. All requirements of these Specifications shall apply to this construction unless otherwise specifically modified herein.
- D. Removal of Water: The installation of pipe and appurtenances under water will be permitted and the requirements of Article 3.04 will be waived.
- E. Excavation shall be performed in accordance with Article 3.01 to the specified limits. The excavation shall be completely cleaned of silt and other fines.
- F. Pipe Bedding: Pipe bedding shall be placed from the bottom of the excavation to six inches above the top of the pipe. The bedding material shall be screened gravel or crushed stone as specified in Article 2.01. Limerock screenings, sand or other fine organic material shall not be used.
- G. The bedding material shall be placed to the lower third of the pipe barrel and then be shaped to receive the pipe at the intended elevation. Bedding shall be provided under the branch of all fittings to furnish adequate support and bearing under the fitting. After



the pipe section is installed and tested if required, the remaining bedding shall be placed to the top of the pipe.

- H. Select backfill material shall be used to backfill from 6 inches above the top of the pipe to a level one foot above standing ground water. The lift shall then be compacted per Article 3.08. General backfill shall then be placed in 8-inch lifts and compacted per Article 3.08.
- I. If the Alternate Method of Construction is used, all backfill material, including specified pipe bedding material, shall be carefully lifted into the trench and not released to fall freely therein until the bucket or container is at or just above water level. Under no circumstances shall backfill material be dumped or pushed into the trenches containing water. Below water level, the bedding and backfill material shall be carefully rammed into place in uniform layers, of equal depth on each side of the pipe, up to one foot above the water level. Above the water level, backfill material shall be placed and compacted for normal backfill as previously specified.

### 3.11 RESTORATION

- A. Provide finished grading in accordance with Section 02260, Finish Grading.
- B. Restore all green space areas disturbed by the trenching operations in accordance with Section 02500, Landscaping, and Section 02930, Sodding or as otherwise applicable.

END OF SECTION

## SECTION 02260

### FINISH GRADING

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

- A. The Contractor shall, under this Section, supply, place, compact and roll finish grade materials prior to landscaping work.
- B. Finish grade sub-soil.
- C. Cut out areas to receive stabilizing base course materials for paving and sidewalks.
- D. Place, finish grade and compact topsoil.

##### 1.02 RELATED WORK

- A. Section 02210 - Earth Excavation, Backfill, Fill and Grading
- B. Section 02222 - Excavation and Backfill for Utilities and Structures
- C. Section 02500 - Landscaping
- D. Section 02930 - Sodding

##### 1.03 PROTECTION

- A. The Contractor shall prevent damage to existing fencing, trees, landscaping, natural features, bench marks, pavement, utility lines, and sprinkler system. Correct and restore any damaged items at no cost to the City.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Topsoil shall be friable loam free from subsoil, roots, grass, excessive number of weeds, stones, and foreign matter; acidity range (pH) of 5.5 to 7.5; containing a minimum of 4% and a maximum of 25% organic matter.

##### 2.02 CRUSHED STONE

- A. Crushed stone for general grading purposes shall be hard, durable, subangular particles of proper size and gradation, and shall be free from organic materials, wood, trash,

sand, loam, chalk, excess fines, and other deleterious materials. Maximum aggregate size shall be  $\frac{3}{4}$  inches.

### PART 3 - EXECUTION

#### 3.01 SUBSOIL PREPARATION

- A. Rough grade subsoil systematically to allow for a maximum amount of natural settlement and compaction. Eliminate uneven areas and low spots. Remove debris, roots, branches, stones, etc., in excess of 2 inches in size. Remove sub-soil which has been contaminated with petroleum products.
- B. Cut out areas, to subgrade elevation, which are to receive stabilizing base for paving and sidewalks.
- C. Bring subsoil to required levels, profiles, and contours. Make changes in grade gradual. Blend slopes into level areas.
- D. Slope grade away from building minimum 4 inches in 10 feet (unless indicated otherwise on Drawings).

#### 3.02 PLACING TOPSOIL

- A. Place topsoil in area where seeding, sodding, and planting is to be performed. Place to the following minimum depths, up to finished grade elevations:
  - 1. 6-inches for seeded areas.
  - 2. 4 1/2-inches for sodded areas.
  - 3. 24-inches for shrub beds.
  - 4. 18-inches for flower beds.
- B. Use topsoil in relatively dry state. Place during dry weather.
- C. Fine grade topsoil eliminating rough and low areas to ensure positive drainage. Maintain levels, profiles, and contours of subgrade.
- D. Remove stones, roots, grass, weeds, debris, and other foreign material while spreading.
- E. Manually spread topsoil around trees, plants, buildings, and other structures to prevent damage which may be caused by grading equipment.
- F. Lightly compact placed topsoil.

### 3.03 SURPLUS MATERIAL

- A. Remove surplus sub-soil and topsoil from site.
- B. Leave stockpile areas and entire job site clean and raked, ready to receive landscaping and or sodding.

END OF SECTION

## SECTION 02332

### LIMEROCK BASE

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

- A. Furnish all labor, materials, equipment and incidentals required to provide limerock base in accordance with the grades and typical sections shown on the Drawings and as specified herein. The Contractor is solely responsible for the cost of limerock base to be provided at various locations within the project corridor, and at potentially varying thicknesses per jurisdictional requirements, or for replacement in kind, as applicable.

##### 1.02 RELATED WORK:

- A. Section 02100 – Clearing and Grubbing
- B. Section 02260 – Finish Grading
- C. Section 02510 - Asphaltic Concrete Pavement

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Source: The material used in limerock base courses shall be material classified as either Miami Oolite Formation or Ocala Formation at the Contractor's option; however, only one formation may be used.
- B. Limerock material shall contain not less than 70 percent of carbonates of calcium and magnesium. The maximum percentage of water sensitive clay material shall be 3%.
- C. Graduation: At least 97 percent (by weight) of the material shall pass a 3-1/2-inch sieve and the material shall be grades uniformly down to dust. The fine material shall consist entirely of dust of fracture. All crushing or breaking up which might be necessary in order to meet such size requirements shall be done before the material is placed on the road.
- D. Quality:
  - 1. The limerock material shall be uniform in quality and shall not contain cherty or other extremely hard pieces or lumps, balls or pockets of sand or clay size material in sufficient quantity as to be detrimental to prevent proper bonding,

finishing or strength of limerock base. Limerock material shall be non-plastic, and the liquid amount shall not exceed 35.

2. Compacted limerock material shall have an average LBR value of not less than 100.

## PART 3 - EXECUTION

### 3.01 PREPARATION

- A. For new limerock base construction, or areas where pavement is to be replaced, Contractor shall remove existing subgrade as required to provide the minimum thickness of new limerock base course as indicated on plans.
- B. Compact subgrade to a density of no less than 98% of maximum density as determined by AHSHTO T-180.
- C. No separate bid item is provided in the proposal for evacuating, grading and compacting subgrade. The cost thereof shall be included in the BID schedule items.

### 3.02 PERFORMANCE

- A. Transporting Limerock: The limerock shall be transported to the point where it is to be used, over rock previously placed if practicable, and dumped on the end of the preceding spread. No hauling over the subgrade or dumping on the subgrade shall be done.
- B. Spreading Limerock:
  1. The limerock shall be spread uniformly, and all segregated areas of fine or coarse rock shall be removed and replaced with well-graded rock.
  2. When the specified compacted thickness of the base is greater than 6-inches, the base shall be constructed in two courses. The thickness of the first course shall be approximately one-half the total thickness of the finished base, or enough additional to bear the weight of the construction equipment without disturbing the subgrade.
- C. Establish grades and cross-sections conforming to plans
  1. Provide a minimum of 8" inches of limerock as required to provide grades, elevations and cross-sections or as indicated on plans.
  2. The Contractor must determine for himself the volume of material required for the site.

D. Compacting and Finishing Base:

1. Work shall comply with the appropriate Section of the FDOT Standard Specifications for Road and Bridge Construction, latest edition.
2. Proposed limerock base shall be compacted to a minimum of ninety-eight percent (98%) of maximum density as determined by ASHTO T-180. Properly compact areas adjacent to curbs, catch basins, manholes and other areas not accessible to rollers with mechanical or hand tamping devices.
3. Correction of Defects:
  - (a) If at any time the subgrade material should become mixed with the base course material, the Contractor shall dig out and remove the mixture, which shall be shaped and compacted as specified above.
  - (b) If cracks or checks appear in the base, either before or after priming, which in the opinion of the Engineer would impair the structural efficiency of the base course or checks by rescarifying, reshaping, adding base material where necessary and recompact are deemed as being necessary, the Contractor shall rectify at no cost to the Owner.

END OF SECTION

## SECTION 02500

### LANDSCAPING

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENT

- A. Items specified in this Section include the installation of new landscaping, or repairs to existing landscaped and grassed areas that may be damaged or disturbed by Contractor activities. The Contractor is to protect existing trees and landscaping, obtain approvals prior to trimming or removal, and replace in kind if removal is approved by the Owner.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02510 - Asphaltic Concrete Pavement
- B. Section 02210 - Earth Excavation, Backfill, Fill and Grading
- C. Section 02930 - Sodding

##### 1.03 SUBMITTALS

- A. The Contractor shall submit submittals for review in accordance with the Section 01300 - Submittals.

##### 1.04 DEFINITIONS

- A. The phrase "FDOT Specifications" shall refer to the Florida Department of Transportation Standard Specifications for Road and Bridge Construction. The FDOT Specifications are referred to herein and are hereby made a part of this Contract to the extent of such references and shall be as binding upon the Contract as though reproduced herein in their entirety.

##### 1.05 PROTECTION OF EXISTING IMPROVEMENTS

- A. The Contractor shall be responsible for the protection of all pavements and other improvements within the work area. All damage to such improvements, as a result of the Contractor's operations, beyond the limits of the work of pavement replacement shall be repaired by the Contractor at his expense.

##### 1.06 GUARANTEE

- A. The Contractor shall guarantee all trees, ground cover or shrubs planted or replanted under this Contract for a period of one year beyond closeout of the project. In the event that any new tree, plant or shrub dies within the guarantee period, the Contractor shall



be responsible for replacement in kind. In the event that a transplanted (reused) tree dies within the guarantee period, the Contractor shall be responsible for replacement in kind, except that the maximum height of any new tree shall be eight feet as measured from the ground surface, once planted, to the top of the tree.

## PART 2 - PRODUCTS

### 2.01 REPLACEMENT TREES, GROUND COVER AND SHRUBS

- A. Replacement trees, ground cover and shrubs shall be of the same type and size and sound, healthy and vigorous, well branched and densely foliated when in leaf. They shall have healthy, well developed root systems and shall be free of disease and insect pests, eggs or larvae.

### 2.02 MULCH

- A. Mulch shall be windproof shredded eucalyptus, mulch shall be clean, fresh, free of branches and other foreign matter. Mulch shall be used around all shrubs, ground covers and tree trunks, and placed to a minimum depth of 2 inches extending from the tree trunk outward two feet.

### 2.03 GRAVEL BEDS

- A. Filter Fabric: Filter fabric shall be nonwoven polyester material Trevia Type 1120 as manufactured by Hoechst Fibers Industries, or equal. Fabric weight shall be 6 ounces per square yard, puncture strength maximum 40 pounds, minimum Flux 240 gallons per minute per square foot. Fabric shall be installed in accordance with the manufacturer's recommendations, with precautions taken to avoid tearing the fabric. Fabric shall be laid in strips with a minimum overlap of one foot.
- B. Limerock: Limerock shall meet ASTM A57 standards and shall be prewashed. Maximum size shall be 3/4 inches. Limerock shall be carefully placed and spread on the fabric to a minimum depth of 6 inches. Final grades and locations shall be as designated on the Drawings.

## PART 3 - EXECUTION

### 3.01 GRADING AND SODDING

- A. Finished grading to be provided in accordance with Section 02260.
- B. Sodding to be provided in accordance with Section 02930.

### 3.02 TREES, GROUND COVER AND SHRUBS

- A. Excavation and Plant Holes: Plant hole excavations shall be roughly cylindrical in shape, with the side approximately vertical. Plants shall be centered in the hole. Bottoms of the holes shall be loosened at least six inches deeper than the required depth of excavation.
- B. Holes for balled and burlaped plants shall be large enough to allow at least eight inches of backfill around the earth ball. For root balls over 18 inches in diameter, this dimension shall be increased to 12 inches. Where excess material has been excavated from the plant hole, the excavated material shall be disposed of as and where directed by the Engineer.
- C. Setting of Plants: The Contractor, when setting plants in holes, shall make sure that when lowered into the hole, the plant shall rest on a prepared hole bottom such that the roots are level with, or slightly above, the level of their previous growth and so oriented such as to present the best appearance.
- D. Palms of the Sabal species may be set deeper than the depth of their original growth, provided that the specified clear trunk height is attained.
- E. The backfill shall be made with planting mixture and shall be firmly rodded and watered-in, so that no air pockets remain. The quantity of water applied immediately upon planting shall be sufficient to thoroughly moisten all of the backfilled earth. Plants shall be kept in a moistened condition for the duration of the Contract.
- F. Staking and Guying: Plants shall be staked in accordance with the following provisions:
  - 1. Small Trees: For trees and shrubs of less than one-inch caliper, the size of stakes and the method of tying shall be such as to rigidly support the staked plant against damage caused by wind action or other effects. Trees larger than one inch and smaller than one and one-half inch caliper shall be staked with a two-inch stake, set at least 24 inches in the ground and extending to the crown of the plant. The plant shall be firmly fastened to the stake with two strands of 14-gauge soft wire, enclosed in rubber hose, or other approved covering. The wire shall then be nailed or stapled to the stake to prevent slippage.
  - 2. Medium Trees: All trees, other than palm trees, larger than one and one-half inch caliper and smaller than two and one-half inch caliper shall be staked with two or more, two-inch by two-inch stakes, eight feet long, set two feet in the ground. The tree shall be midway between the stakes and held firmly in place by two strands of 12-gauge wire, applied as specified above for single stakes. The wires shall be tightened and kept tight by twisting.

3. Large Trees: All trees, other than palm trees, larger than two and one-half inch caliper, shall be braced with three or more two-inch by four-inch wood braces, toenailed to cleats which are securely banded at two points to the palm, at a point at least six feet above the ground. The trunk shall be padded with five layers of burlap under the cleats. Braces shall be approximately equidistantly spaced and secured underground with two-inch by four-inch by 24-inch stake pads. In firm rock soils, Number 4 steel reinforcing rods or one-half inch pipe is acceptable.
  4. Palm Trees: Palm trees shall be braced with three or more two-inch by four-inch wood braces, toenailed to cleats which are securely banded at two points to the palm, at a point at least six feet above the ground. The trunk shall be padded with five layers of burlap under the cleats. Braces shall be approximately equidistantly spaced and secured underground with two-inch by four-inch by 24-inch stake pads. In firm rock soils, Number 4 steel reinforcing rods or one-half inch pipe is acceptable.
- G. Pruning: All broken or damaged roots shall be cut off smoothly, and the tops of all trees shall be pruned in a manner complying with standard horticultural practice. At the time pruning is completed, all remaining wood shall be alive. All cut surfaces of one inch or more in diameter, above the ground, shall be treated with approved commercial tree paint.
  - H. Maintenance: Maintenance shall begin immediately after each plant is planted and shall continue until all work under this Contract has been completed and accepted by the City. Plants shall be watered, mulched, weeded, pruned, sprayed, fertilized, cultivated and otherwise maintained and protected. Settled plants shall be reset to proper grade position, planting saucer restored, and dead material removed. Guys shall be tightened and repaired.
  - I. Defective work shall be corrected as soon as possible after it becomes apparent. Upon completion of planting, the Contractor shall remove excess soil and debris, and repair any damage to structures, etc., resulting from planting operations.

### 3.03 GRAVEL BEDS

- A. Clean, grade and place geotextile prior to placing gravel in gravel beds.

END OF SECTION

## SECTION 02507

### PRIME AND TACK COATS

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

- A. The work specified in this section consists of an application of bituminous material on previously prepared base in accordance with these specifications and in conformity with the line, grades, dimensions, and notes shown on the Drawings. The Contractor is solely responsible for the cost of prime and tack coats to be provided at various locations within the project corridor, and at potentially varying thicknesses per jurisdictional requirements, or for replacement in kind, as applicable.
- B. Tack coat will be required prior to overlaying existing pavement.

##### 1.02 RELATED WORK

- A. Section 02332 – Limerock Base
- B. Section 02510 - Asphaltic Concrete Pavement

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Prime Coat: Unless otherwise indicated, the material used for the prime coat shall be cut back asphalt, Grade RC-70 or RC-250 and shall conform with the requirements specified in AASHTO Designated M 81-75 (1982). Unless otherwise indicated, the use of either RC-70 or RC-250 shall be at the CONTRACTOR'S option.
- B. Tack Coat: The material used for the tack coat shall be emulsified asphalt, Grade RS-2 and shall conform to the requirements specified in AASHTO Designation M 140-82.
- C. All materials are required to meet the standards of the jurisdictional agency having authority over the roadway right-of-way limits.

##### 2.02 EQUIPMENT

- A. The pressure distributor used for placing the tack or prime coat shall be equipped with pneumatic tires having sufficient width of rubber in contact with the road surface to avoid breaking the bond of or forming a rut in the surface.

- B. The distance between the centers of openings of the outside nozzles of the spray bar shall be equal to width of the application required, within an allowable variation of 2-inches. The outside nozzle at each end of the spray bar shall have an area of opening of not less than 25 percent, nor more than 75 percent in excess of other nozzles which shall have uniform openings. When the application covers less than the full width, the normal opening of the end nozzle at the junction line may remain the same as those of the interior nozzle.

### PART 3 - EXECUTION

#### 3.01 PREPARATION

- A. Before applying any bituminous material, all loose material, dust, dirt, and foreign material, which might prevent proper bond with the existing surface, shall be removed. Particular care shall be taken to clean the outer edges of the strip to be treated in order to ensure that the prime or tack coat will adhere.
- B. When the prime or tack coat is applied adjacent to curb and gutter, or another concrete surface (except where they are to be covered with a bituminous wearing coarse) such concrete surfaces shall be protected by heavy paper or other protective material while the primer or tack coat is being applied. Any bituminous material deposited on such concrete surfaces shall be removed immediately.

#### 3.02 WEATHER LIMITATIONS

- A. No bituminous material shall be applied when the air temperature is less than 50 degrees Fahrenheit in the shade, or when the weather conditions or the condition of the existing surface is unsuitable. In no case shall bituminous material be applied while rain is falling or when there is water on the surface to be covered.

#### 3.03 APPLICATION OF PRIME COAT

- A. After the base has been finished the full width of surface shall be swept with a power broom supplemented with hand brooms and mechanical blowers prior to the application of prime coat. Care shall be taken to remove all loose dust, dirt and objectionable matter. If deemed necessary, the base shall be lightly sprinkled with water immediately in advance of the prime coat. The prime coat shall be applied to the full width of the base.
- B. The temperature of the prime material shall be such as to insure uniform distribution. The material shall be applied with a pressure distributor as specified above. The amount to be applied shall be sufficient to coat the surface thoroughly and uniformly without any excess to form pools or to flow off the base. For limerock base, the rate of

application shall not be less than 0.10 gallons per square yard; for shell base, the rate of application shall not less than 0.15 gallons per square yard.

- C. If the roadway is to be opened for use following the application of the prime material, a light uniform application of clean sand shall be applied and rolled. The sand shall be non-plastic, shall be free from slit and rock particles and shall not contain any sticks, vegetation, grass roots, or organic matter. After the sand covering has been applied, the surface may be opened to traffic.

#### 3.04 APPLICATION OF TACK COAT

- A. In general, a tack coat will not be used on primed bases except in areas which have become excessively dirty and cannot be cleaned or where the prime has cured and lost all of its bonding effect.
- B. No tack coat shall be applied until the primed base or leveling course has been cleaned and is free from sand, dust or other objectionable material.
- C. The tack coat shall be applied with a pressure distributor as specified above. It shall be heated to a suitable consistency and applied in a thin uniform layer at the rate of between .02 gallons and .08 gallons per square yard.
- D. The tack coat shall be applied sufficiently in advance of the laying of the wearing surface to permit drying, but shall not be applied so far in advance or over such an area as to lose its adhesiveness as a result of being covered with dust or other foreign material. Suitable precautions shall be taken by the Contractor to protect the surface while the tack coat is drying and until the wearing surface is applied.

END OF SECTION

## SECTION 02510

### ASPHALTIC CONCRETE PAVEMENT

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

- A. The work specified in this section consists of the construction of asphaltic concrete surface course composed of a mixture of aggregates, mineral filler and asphalt cement properly laid upon a prepared base or a newly constructed and compacted, primed and tacked roadway base course, in accordance with these specifications and in conformity with the lines, grades, thickness and typical cross section shown on the Drawings. The Contractor shall furnish asphaltic concrete surface course in the locations and to the extent indicated on the Drawings.
- B. The Contractor is solely responsible for the cost of asphaltic concrete pavement to be provided at various locations within the project corridor, and at potentially varying thicknesses per jurisdictional requirements, or for replacement in kind, as applicable.
  - 1. For new asphalt roadway pavement construction or reconstruction, provide asphaltic concrete structural surface course consisting of one of the following:
    - a. "Superpave Asphalt Concrete" per FDOT Standard Specifications for Road and Bridge Construction.
    - b. Or as otherwise required by the authority having jurisdiction over the roadway right-of-way and as indicated on the plans and Standard Details.
  - 2. Thickness of the asphalt course shall be two (2") inch thick minimum, or as specified on the Drawings, or by the regulatory agency having jurisdictional authority over the roadway right-of-way limits. In addition, asphaltic pavement may be required to be replaced in kind if deemed necessary by the agency having jurisdictional authority over the right-of-way.

##### 1.02 QUALITY ASSURANCE

- A. Construction of asphaltic concrete surface courses shall be in accordance with the Standard Specifications for Road and Bridge Construction (current edition), of the Florida Department of Transportation, and supplements thereto, hereinafter referred to as FDOT Specifications, except as amended herein. The FDOT Specifications are hereby made a part of this contract to the extent they are applicable thereto and shall be as binding upon the Contractor as though reproduced herein.

### 1.03 RELATED SECTIONS

- A. Section 02332 - Limerock Base.
- B. Section 02507 - Prime and Tack Coats.
- C. Section 02582 – Raised Retro-Reflective Pavement Markers.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Bituminous Material: Asphalt cement, Viscosity Gard AC-20 or AC-30, shall conform to the requirements of FDOT Specifications.
- B. Coarse Material: Coarse aggregate, stone or slag shall conform to the requirements of FDOT Specifications.
- C. Fine Aggregate Material: Fine aggregate shall conform to the requirements of FDOT Specifications.
- D. Mineral Filler: Mineral filler shall conform to the requirements of FDOT Specifications.

### 2.02 GENERAL COMPOSITIONS OF MIXTURE:

- A. The bituminous mixture shall be composed of a combination of aggregate (coarse, fine, or mixture thereof), mineral filler, if required, and bituminous material. The several aggregate fractions shall be sized, uniformly graded and combined in such proportion that the resulting mixture will meet the grading and physical properties of the approved job mix formula.
- B. In all cases, the job mix formula shall be within the design ranges specified in the following table.



### Gradation Design Range

<u>Sieve Size</u>	<u>% by Weight Passing</u>
	<u>Type S-III</u>
¾-inch	
½-inch	100
3/8-inch	88-100
No. 4	60-90
No. 10	40-70
No. 40	20-45
No. 80	10-30
No. 200	2-6

#### 2.03 JOB MIX FORMULA

- A. No work shall be started on the specific project until the Engineer has approved the job mix formula. FDOT approvals will be required for all materials to be used within their ROW limits.
- B. The job mix formula shall conform to the requirements of FDOT Specifications. In addition, the job mix formula shall include test data showing that the material as produced meets the requirements of the following table:

	Minimum		Minimum		Min Effective
Mix	Marshall	Flow	VMA	Air	Asphalt
Type	Stability	(0.01 in)	(%)	Voids	Content
_____	(%) _____	_____	_____	(%) _____	(%) _____
SP-9.5	1,500	8 – 14	15	3 – 7	5.5

### PART 3 - EXECUTION

#### 3.01 TRANSPORTATION

- A. The mixture shall be transported in tight vehicles previously cleaned of all foreign material and, if necessary, each load shall be covered with a waterproof canvas cover of

sufficient dimensions to protect it from weather conditions. The inside surface of the truck bodies may be thinly coated with soapy water, or a mixture of water with not more than five percent of lubricating oil, but no excess of either shall be used. After the truck bodies are coated and before any mixture is placed therein, they shall be raised so that all excess water will drain out. Kerosene, gasoline or similar products shall not be used to prevent adhesion.

### 3.02 LIMITATION FOR SPREADING

- A. The mixture shall be spread only when the surface is properly prepared and is intact, firm, cured and dry. No mixture shall be spread when the air temperature is less than 40-degree Fahrenheit, nor when the spreading cannot be finished and compacted during the daylight hours. The temperature of the mix at the time of spreading shall not be less than 230-degree Fahrenheit.

### 3.03 PLACING

- A. The mixture shall be placed in accordance with the requirements of FDOT Specifications. The new asphalt pavement shall be placed in two lifts. The second lift shall match the elevation of the adjacent pavement.

### 3.04 COMPACTING

- A. The mixture shall be compacted in accordance with the requirements of FDOT Specifications.

### 3.05 JOINTS

- A. Joints shall conform to the requirements of FDOT Specifications.

### 3.06 FIELD QUALITY CONTROL

- A. Surface Requirements: Depressions which may develop after initial rolling shall be remedied by loosening or removing the mixture and adding new material to bring the areas to a true surface. No skin patching shall be done. Such portions of the completed pavement which are defective in surface compaction or in composition, or that do not comply with all other requirements of these specifications, shall be taken up and replaced with suitable mixture, properly laid in accordance with these specifications and at the expense of the Contractor.
- B. Thickness Requirements: The thickness of the compacted asphaltic concrete surface course shall be no less than that shown on the Drawings as determined by coring. Thickness testing and correction of defective work shall be as specified in FDOT Specifications.

- C. "As-Built" limerock elevations shall be signed and sealed by a registered land surveyor and submitted to the Project Engineer for approval prior to placement of asphalt. Elevation shall be taken at high and low points, midpoint, intersections and breaks in grade at intervals not to exceed 50 feet. No separate pay item is included in bid form for this work. Include limerock as-built cost in asphalt section.
- D. Protection of Pavement: After the completion of the pavement, no vehicular traffic of any kind shall be permitted on the pavement until it has set sufficiently to prevent rutting or other distortion.

END OF SECTION

## SECTION 02515

### WATER SERVICE CONNECTIONS AND TRANSFERS

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. All applicable provisions of the Contract Requirements shall govern the work under this Section.

##### 1.02 WORK INCLUDED

- A. This section covers the work necessary for service connections, laying service pipe, casing pipe, making connections to the new water main and to the existing service pipe, testing and flushing, and all incidental work necessary to accomplish the construction.
- B. The work includes trench excavation, backfill and compaction, furnishing and installing service clamps, corporation stops or valves, meter yokes or connections, service connection piping, fittings, and appurtenances within the designated limits, testing, flushing, and other incidental work as required for a complete installation. Included are the installation and transfers of 5/8-inch, one (1) inch, 1½ inch, and two (2)-inch meter connections within the limits shown on the plans.
- C. The approximate location of service connections to be installed or transferred will be all reconnections of existing services, at a minimum with other service connections suggested by the Contractor and approved by the Engineer and City.
- D. All new domestic services shall be Polyethylene tubing per City of Hollywood Standards.
- E. Contractor shall coordinate all work with City of Hollywood Public Utilities staff prior to any proposed shutdowns or isolation of the existing system for tie-ins.

##### 1.03 RELATED WORK

- A. See Divisions 2 and 15.

#### PART 2 - PRODUCTS

##### 2.01 EXCAVATION

- A. Excavation shall conform to the requirements of Section 02222 - Excavation and Backfill for Utilities and Structures.

## 2.02 BACKFILL

- A. See Section 02222 Excavation and Backfill for Utilities and Structures.

## 2.03 MISCELLANEOUS FITTINGS

- A. Refer to Section 15001 – Water Services and Miscellaneous Fittings.

## 2.04 SERVICE CONNECTION SIZE

- A. The location and size of service connection to be transferred or installed will be as determined in the field by Contractor. The meter and meter box will be installed by the Contractor as directed. Minimum tap size shall be one (1) inch. If a new water meter is to be installed by the Contractor, a Class III water License Certification is required.

# PART 3 - EXECUTION

## 3.01 TRENCH EXCAVATION AND BACKFILL

- A. Conform to the requirements of Section 02222 - Excavation and Backfill for Utilities and Structures. Place only select backfill material in the trench within six (6) inches of the service connection pipe or line. Cover around pipe shall be 8-inches or as indicated on the plans. Backfill and compact remainder of trench with excavated material as specified in the referenced section.

## 3.02 CONNECTION TO MAIN

- A. Clean exterior of main of dirt or other foreign matter that may impair the quality of the completed connection. Then place service clamp at the desired location and clamp tight by tightening alternate nuts progressively. Do not place service clamp within one (1) foot of pipe joint or another clamp.
- B. Taps shall be made in the pipe by experienced workmen using tools in good repair with the proper adapters for the size main being tapped.

## 3.03 PREPARATION OF TRENCH

- A. Grade the bottom of the trench by hand to the line and grade to which the pipe is to be laid, with proper allowance for special bedding. All other conditions and operations as specified in Section 02222 must be adhered to. The trench bottom shall form a continuous and uniform bearing support for the pipe. A six (6) inch layers of imported earth or other specified material will be required over and under pipe in areas where suitable trench side material is not available.

### 3.04 UNDERCROSSING OF ASPHALT-SURFACED ROADS

- A. Service connection piping under asphalt-surfaced roads shall be bored or jacked or as otherwise shown on the Drawings. Open cutting of asphalt-surfaced roads is not permitted except at the direction of the Engineer. The service connection pipe shall be installed so that it has a minimum cover of two (2) feet with a slight grade sloping away from the water main.

### 3.05 POLYETHYLENE PLASTIC TUBING

- A. Refer to Section 15001 – Water Services and Miscellaneous Fittings.

### 3.06 RECONNECTION OF EXISTING METERS

- A. The work involves reconnecting existing water meters to new water mains and placing the existing water mains out of service.
- B. There shall be no water service interruptions without prior notice to the property owner/occupant, and without the authorization of the City.
- C. Existing services shall not be disconnected from existing water mains until the new replacement water mains have been completely installed, successfully tested, accepted by the City, and released for service by the Florida Department of Environmental Protection.
- D. Existing water mains serving active potable water services, irrigation systems, fire sprinkler services, fire hydrants, etc., shall remain in service until all existing services and hydrants have been successfully reconnected to the new replacement water mains.
- E. Existing metered services that are to be transferred from existing mains to new water mains shall include new water service piping between the new main and the meter and shall also include replacement of the existing curb stop as part of the Contract. See City Standard details for additional requirements for tying in metered connections.

### 3.07 HYDROSTATIC TEST AND LEAKAGE

- A. Test service connections and service connection tubing by either testing in conjunction with the main at the test pressure required for the main, or by testing at the normal hydrostatic main pressure after the main has been completely installed and tested. Inspect visually for leaks and repair any leaks before backfilling. Sufficient sampling points shall be taken from service line connections to assure uniform results throughout the system being tested. Duration of the test shall be at least fifteen (15) minutes.

### 3.08 DISINFECTION

- A. Service connection transfers shall be disinfected as follows:
1. Make connection to the main pipeline which shall have been previously hydrostatically tested and disinfected.
  2. Prior to connecting plastic tubing to existing copper tubing or meter stop, flush new plastic tubing by fully opening corporation stop and allowing water to run for 2 minutes.
  3. Close corporation stop and meter stop, connect new plastic tubing to existing copper tubing or to meter stop, as applicable. Open corporation stop and allow to stand for a minimum of 30 minutes retention period. Open meter stop.
- B. The City may put extra chlorine in the water system during the time of service connection transfers to provide sufficient chlorine residual to adequately disinfect service connections when the above procedure is followed.

END OF SECTION

## SECTION 02526

### CONCRETE PAVEMENT, CURB AND WALKWAY

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENT

- A. Concrete pavement, curbs and sidewalk shall be constructed to the lines and grades and dimensions required for a complete installation as shown on the Drawings and specified herein. Existing features are to be replaced in kind and at the same grades and elevations.

##### 1.02 SUBMITTALS

- A. Shop drawings for reinforcing, joint material and mix designs shall be submitted for review in accordance with Section 01300 - Submittals.

#### PART 2 - PRODUCTS

##### 2.01 CONCRETE

- A. Concrete shall be Class B, conforming to Section 03300 – Cast-in-place Concrete, Reinforcing and Formwork, unless noted or specified otherwise.

##### 2.02 REINFORCING AND WELDED WIRE FABRIC

- A. Joint reinforcing and welded wire fabric shall conform to Section 03300 – Cast-in-place Concrete, Reinforcing and Formwork.

##### 2.03 JOINT SEALER FOR PAVEMENT

- A. Joint sealer shall be a one- or two-part polysulfide base self-leveling sealant for horizontal surfaces that has been developed for foot and vehicular traffic. The sealant shall conform to FDOT standards.

##### 2.04 PREFORMED JOINT FILLER

- A. Preformed joint filler shall be sponge rubber and conform to the requirements of AASHTO Designated M148, Type 1.



## PART 3 - EXECUTION

### 3.01 SUBGRADE CONDITION

- A. The finished subgrade shall be maintained in a smooth, compact condition and any areas which are disturbed prior to placing of the concrete shall be restored at the Contractor's expense. The subgrade shall be moist at the time the concrete is placed. Water shall be uniformly applied ahead of the paving operations as directed by the Engineer. If the Contractor does not maintain the subgrade in the required moist condition, a vapor barrier sheet will be required between the subgrade and the concrete.
- B. The subgrade shall be accurately trimmed to the required elevation with a 1/4-inch tolerance. High areas shall be trimmed to proper elevation. Low areas may be filled with suitable material and compacted to the specified density or filled with concrete integrally with the placing of the pavement.

### 3.02 SETTING FORMS

- A. The forms shall be accurately set to line and grade and such that they rest firmly, throughout their entire length, upon the compacted subgrade surface. Forms shall be joined neatly and tightly and braces to test the pressure of the concrete and the finishing operations. The alignment and grade of all forms shall be approved before and immediately prior to the placing of concrete.

### 3.03 MIXING CONCRETE

- A. Concrete shall be mixed in accordance with Section 03300, Cast-in-place Concrete, Reinforcing and Formwork.

### 3.04 PLACING CONCRETE

- A. The concrete shall be distributed on the subgrade to such depth, that, when it is consolidated and finished, the slab thickness required by the Drawings will be obtained at all points and the surface will at no point be below the grade specified for the finished surface, after application of the allowable tolerance. The concrete shall be deposited on the subgrade in a manner which will require as little rehandling as possible.
- B. Fabric reinforcement shall be placed at mid slab depth, and the fabric shall be maintained at this location during the placing and finishing operations.
- C. Concrete shall be thoroughly consolidated against and along the faces of all forms, by means of hand-operated, spud-type vibrators. Vibrators shall not be permitted to come in contact with the subgrade or a side form. Vibration at any one location shall not continue so long as to produce puddling or the accumulation of excessive grout on the

surface. In no case shall the vibrator be operated longer than 15 seconds in any one location.

### 3.05 STRIKING-OFF, CONSOLIDATING AND FINISHING CONCRETE

- A. Immediately after the placing, the concrete shall be struck off, consolidated and finished, to produce a finished pavement conforming to the cross section, width and surface. Sequence of operations shall be as follows: strike-off; vibratory consolidation; screeding; floating; removal of laitance; straight-edging; and final surface finish.

### 3.06 STRAIGHTEDGING AND SURFACE CORRECTIONS

- A. After floating has been completed and the excess water removed, but while the concrete is still in a plastic state, the surface of the concrete shall be tested for trueness with an accurate 10-foot straightedge. The straightedge shall be furnished by the Contractor. The straightedge shall be held in successive positions parallel to the road center line, in contact with the surface, and the whole area tested from one side of the slab to the other as necessary. Any depressions shall be immediately filled with freshly mixed concrete and struck-off; consolidated and refinished. High areas shall be cut down and refinished. Straightedge testing and surface correction shall continue until the entire surface appears to conform to the required grade and cross section.

### 3.07 FINAL FINISH

- A. As soon as the water sheen has disappeared from the surface of the pavement and just before the concrete becomes nonplastic, a light broom finish shall be given to the surface.

### 3.08 EDGING

- A. After the final finish has been applied, but before the concrete has become nonplastic, the edges of the pavement along each side of the strip being placed, on each side of construction joints and along any structure extending into the pavement, shall be carefully rounded to a 1/4 inch radius except as otherwise indicated. A well-defined and continuous radius shall be produced and a smoother, dense mortar finish obtained. All concrete shall be completely removed from the top of the joint filler.
- B. All joints shall be checked with a straightedge before the concrete has become nonplastic and, if one side of the joint is higher than the other or the entire joint is higher or lower than the adjacent slabs, corrections shall be made as necessary.

### 3.09 JOINTS

#### A. Construction Joints

1. Construction joints shall be located as shown on the Drawings and/or as directed by the Engineer.

#### B. Expansion Joints Around Structures

1. Expansion joints shall be formed by placing premolded expansion joint material about all structures and features projecting through, into or against the pavement. Unless otherwise indicated, such joints shall be 1/2 inch in width.

#### C. Transverse Expansion Joints

1. Open type transverse expansion joints shall be provided at all sidewalk returns and at 50 feet intervals and wherever indicated on the Drawings. Open type joints shall be formed by staking a 1/4-inch-thick metal bulkhead in place and placing concrete on both sides. After the concrete has set sufficiently to preserve the width and shape of the joint, the bulkhead shall be removed. After the sidewalk has been finished over the joint, the slot shall be opened and edged with a tool having a 1/2-inch radius. Transverse expansion joints shall be cleaned and filled with joint filler strips 1/4-inch-thick conforming to the requirements of AASHTO M-153.

#### D. Scored Joints

1. Scored joints shall be either formed or sawed at 5-foot intervals and shall extend to a depth of at least one fourth of the sidewalk slab thickness.

### 3.10 CURING

- A. After the finishing operations have been completed and as soon as the concrete has hardened sufficiently that marring of the surface will not occur, the entire surface and the edges of the newly placed concrete shall be covered and cured with membrane curing compound.

- B. Curing compound shall be uniformly applied to the surfaces to be cured, in a single coat, continuous film, at the rate of one gallon to not more than 200 square feet, by a mechanical sprayer.

- C. Curing compound shall not be applied during periods of rainfall. Curing compound shall not be applied to the inside faces of joints to be sealed. Should the film become damaged from any cause within the required curing period, the damaged portions shall be repaired immediately with additional compound. Upon removal of side forms, the

sides of the slabs exposed shall immediately be coated to provide a curing treatment equal to that provided for the surface.

### 3.11 CURB AND SIDEWALK CONSTRUCTION

- A. The concrete curbs and sidewalks shall be constructed on a prepared smooth subgrade of uniform density. Large boulders and other obstructions shall be removed to a minimum depth of 6 inches below the finished subgrade elevation and the space shall be backfilled with sand, base course material or other suitable material which shall be thoroughly compacted by rolling or tamping. The Contractor shall furnish a template and shall thoroughly check the subgrade prior to depositing concrete.
- B. Concrete for curbs, and sidewalks shall be formed, mixed, placed and finished in conformance with the requirements of Division 3, except as modified herein. Concrete shall be cured with a clear membrane curing compound which shall be applied at a uniform rate of one gallon per 200 square feet in accordance with the requirements specified herein. Sidewalks shall be given a light broom finish.

### 3.12 CURBS

- A. Curbs shall be constructed in uniform sections ten feet in length except where shorter sections are necessary for closures or arcs. The sections shall be separated by sheet metal templates set perpendicular to the face and tip of the curve and not less than 2 inches longer than the depth of the curb. The templates shall be held firmly during the placing of the concrete and shall be allowed to remain in place until the concrete has set sufficiently to hold its shape but shall be removed while the forms are still in place.
- B. After the concrete has sufficiently set for a minimum of 12 hours, the Contractor shall remove the forms and backfill the spaces on each side. The earth shall be compacted in satisfactory manner without damage to the concrete Work. Minor defects shall be filled with a mortar composed of one-part Portland cement and two parts fine aggregate.

### 3.13 PAVEMENT CURB AND SIDEWALK REPAIR

- A. All damage to pavement, curb, or sidewalk as a result of work under this Contract shall be repaired in a manner satisfactory to the Engineer and at no additional cost to the Owner. The repair shall include all work as specified herein.
- B. The width of all repairs shall extend at least 12 inches beyond the limit of the damage or as required by jurisdictional agencies. The edge of the pavement curb or sidewalk to be left in place shall be cut to a true edge with a saw or other approved method so as to provide a clean edge to abut the repair. The line of the repair shall be reasonably uniform with no unnecessary irregularities.

- C. All modified, restored, or repaired sidewalks must meet all jurisdictional authority requirements; including but not limited to, thickness, reinforcement, ADA compliance, slopes and safety requirements.

END OF SECTION

## SECTION 02580

### PAVEMENT MARKING

#### PART 1 - GENERAL

##### 1.01 REQUIREMENT

- A. This section consists of striping pavement, pavement markings and parking stall wheel stops as indicated on the Drawings, specified herein, and as required for a complete installation.

##### 1.02 SUBMITTALS

- A. The Contractor shall submit shop drawings and other information to the Engineer for review in accordance with Section 01300, Submittals.
- B. Submittals must be in compliance with the agency having jurisdictional authority over the right-of-way limits of the roadway. The Contractor is responsible for meeting all necessary striping and pavement marking requirements for the various roadways and alleyways included in this project.

##### 1.03 QUALITY CONTROL

- A. The phrase "FDOT Specifications" shall refer to the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition. The FDOT Specifications, are referred to herein and are hereby made a part of this Contract to the extent of such references and shall be as binding upon the Contract as though reproduced herein in their entirety. "BCTED" shall refer to Broward County Traffic Engineering Division.

#### PART 2 - PRODUCTS

##### 2.01 PAVEMENT MARKING

- A. Pavement stripes shall be thermoplastic.

#### PART 3 - EXECUTION

##### 3.01 PAVEMENT MARKING

- A. The surface, which is to be painted shall be cleaned, by compressed air or other effective means, immediately before the start of painting, and shall be clean and dry

when the paint is applied. Any vegetation or soil shall be removed from the pavement before edge striping is begun.

- B. The traffic stripe shall be of the specified width, with clean, true edges and without sharp breaks in the alignment. A uniform coating of paint shall be obtained, and the finished stripe shall contain no light spots or paint skips. Any stripes which do not have a uniform, satisfactory appearance, both day and night, shall be corrected.
- C. All newly painted stripes, including edge stripes, shall be protected until the paint is sufficiently dry to permit vehicles to cross the stripe without damage from the tires. While the center line stripes are being painted, all traffic shall be routed away from the painting operations and the newly painted stripe. When necessary, a pilot car shall be used to protect the painting operations from traffic interference.
- D. Any portions of the stripes damaged by passing traffic or from other cause shall be repainted at the Contractor's expense.
  - 1. Thermoplastic Traffic Stripes and Markings: Thermoplastic pavement markings, including stripes, pavement messages, stop bars, directional arrows, reflective pavement markers and other miscellaneous items, will be replaced to match preconstruction conditions. The thermoplastic compound shall be as specified in Section 711 of the FDOT Specifications. The thermoplastic compound shall be extruded or sprayed onto the pavement surface in a molten state by mechanical means, with surface application of glass spheres, when required, and upon cooling to ambient pavement temperature shall produce an adherent pavement marking of specified thickness and width and capable of resisting deformation.
- E. The portion of the pavement surface or thermoplastic marking to which the marker is attached by the adhesive shall be cleaned of dirt, curing compound, grease, oil, moisture, loose or unsound pavement and any other material which would adversely affect the adhesive. Reflective markers shall be installed in such a manner that the reflective face of the marker is perpendicular to a line parallel to the roadway centerline. No markers shall be installed over longitudinal or transverse joints of the pavement surface. The adhesive shall be spread on the bonding surface (not the marker) so that 100 percent of the bonding area of the marker will be covered.
- F. The adhesive application shall be of sufficient thickness so that when the marker is pressed into the adhesive, excess adhesive shall be forced out around the entire perimeter of the marker. All excessive adhesive shall be removed from in front of the reflective faces. If any adhesive or foreign matter adheres to the reflective face of the marker, the marker shall be replaced. The Engineer shall determine the minimum time necessary to cure the adhesive for sufficient set to bear traffic.

END OF SECTION

## SECTION 02581

### TRAFFIC SIGNS

#### PART 1 - GENERAL

##### 1.01 REQUIREMENT

- A. This section consists of traffic signs as indicated on the Drawings, specified herein and as required for a complete installation or removal and replacement.

##### 1.02 SUBMITTALS

- A. The Contractor shall submit shop drawings and other information to the Engineer for review in accordance with Section 01300, Submittals.

##### 1.03 CERTIFICATION

- A. The Contractor shall furnish the manufacturer's certification that all signs furnished conform to these specifications and shall replace or repair at its expense all signs that fail to meet this requirement.

##### 1.04 QUALITY CONTROL

- A. The phrase "FDOT Specifications" shall refer to the Florida Department of Transportation Standard Specifications for Road and Bridge Construction. The FDOT Specifications, are referred to herein and are hereby made a part of this Contract to the extent of such references and shall be as binding upon the Contract as though reproduced herein in their entirety. "BCTED" shall refer to Broward County Traffic Engineering Division.

#### PART 2 - PRODUCTS

##### 2.01 TRAFFIC SIGNS

- A. General: Traffic regulating signs shall conform to the colors, dimensions, and requirements of the Manual on Uniform Traffic Control Devices (ANSI) and displaying the lettering and symbols indicated on the Drawings.
- B. Sign Panels and Support Members: Sign panels and support members shall conform to Aluminum Association Alloy 6061-T6.
- C. Sign Posts: Sign posts installed east of U.S. 1 Shall be hot dipped galvanized steel or aluminum.
- D. Bolts: Bolts shall conform to Aluminum Association Alloy 2024-T4 with an anodic coating 0.0002-inches thick minimum and chromate sealed.



- E. Nuts: Nuts shall conform to Aluminum Association Alloy 6269-T9.
- F. Reflective Sheeting: Reflective sheeting shall conform to FDOT Type A requirements.
- G. Construction Warning Signs: The Contractor shall install traffic and warning signs during construction in accordance with OSHA, FDOT and Broward County Public Works requirements.
- H. Maintenance of Traffic and Pedestrian safety shall comply with Section 01570 – Traffic Regulations and Maintenance of Traffic, Broward County standards, FDOT Standards and Specifications, or as necessary to meet requirements for the agency having jurisdictional authority over the roadway right-of-way limits.

END OF SECTION

## SECTION 02582

### RAISED RETRO-REFLECTIVE PAVEMENT MARKERS AND BITUMINOUS ADHESIVE

#### PART 1 - GENERAL

##### 1.01 REQUIREMENTS

- A. Place raised retro-reflective pavement markers (RPMs) and adhesive, which upon installation produces a positive guidance system to supplement other reflective pavement markings.

#### PART 2 - PRODUCTS

##### 2.01 PAVEMENT MARKERS

- A. Use only Class B markers unless otherwise shown in the Plans. Meet the requirements of the Florida Department of Transportation, latest edition. Use only reflective pavement markers and bituminous adhesive that are listed on the City's Qualified Products List (QPL). Provide to the Engineer a manufacturer's certification conforming to the requirements of Section 6, which confirms that each product meets the requirements of this Section.

##### 2.02 CONTRACTOR'S RESPONSIBILITY FOR NOTIFICATION

- A. Notify the Engineer prior to the placement of RPMs. At the time of notification, indicate the manufacturer and the LOT numbers of RPMs and bituminous adhesive that are intended for use. Verify that the approved LOT numbers appear on the material packages. Furnish a test report to the Engineer certifying that the materials meet all requirements specified.

#### PART 3 - EXECUTION

##### 3.01 APPLICATION

- A. Use equipment having either thermostatically controlled double boiler type units utilizing heat transfer oil or thermostatically controlled electric heating pots to install hot applied bituminous adhesive. Do not use direct flame melting units with flexible adhesives; however, this type of unit may be used with standard adhesive in accordance with manufacturer's recommendations. Use a melter/applicator unit suited for both melting and pumping the adhesive through heated applicator hoses.
- B. Heat the adhesive to between 375°F and 425°F and apply directly to the bonding surface from the melter/applicator by either pumping or pouring. Maintain the application temperature between 375°F and 425°F. The adhesive may be reheated.

However, do not exceed the manufacturer's recommendations for pot life at application temperatures.

- C. Apply RPMs to the bonding surface using bituminous adhesives only. The Engineer will conduct field testing in accordance with FM 5-566. Correct RPMs not applied in accordance with these requirements at no cost to the Department.
- D. Prior to application of adhesive, clean the portion of the bonding surface of any material which would adversely affect the adhesive.
- E. Apply the adhesive to the bonding surface (not the marker) so that 100% of the bonding area of the marker will be covered, in accordance with adhesive manufacturer's recommendations. Apply sufficient adhesive to ensure, that when the marker is pressed downward into the adhesive, adhesive will be forced out around the entire perimeter of the marker.
- F. Immediately remove excess adhesive from the bonding surface and exposed surfaces of the RPMs. Soft rags moistened with mineral spirits meeting Federal Specifications TT-T-291 or kerosene may be used to remove adhesive from exposed faces of the RPMs. Do not use any other solvent. If any adhesive, pavement marking materials or other foreign matter adheres to the reflective face of the marker, replace the marker at no cost to the Department.
- G. Install RPMs with the reflective face of the RPM perpendicular to a line parallel to the roadway centerline.
- H. Ensure that all final RPMs are in place prior to opening the road to traffic. If more than 2% of the RPMs fail in adhesion or alignment within the first 45 days under traffic, replace all failed markers at no expense to the Department. If more than 5% of the markers fail in adhesion and or alignment during the initial 45-day period, the Engineer will extend the replacement period an additional 45 days from the date that all replacement markers have been installed. If, at the end of the additional 45-day period, more than 2% of all markers (initial installation and 45-day replacements combined) fail in adhesion or alignment, replace all failed markers at no expense to the Department.
- I. Contractor's Responsibility for Notification: Notify the Engineer prior to the placement of RPMs. At the time of notification, indicate the manufacturer and the LOT numbers of RPMs and bituminous adhesive that are intended for use. Verify that the approved LOT numbers appear on the material packages. Furnish a test report to the Engineer certifying that the materials meet all requirements specified.

END OF SECTION

## SECTION 02930

### SODDING

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. Provide all labor, materials, and equipment necessary for complete sodding of areas affected by construction. This shall include, but not be limited to: liming, fertilizing, sodding, necessary barriers, tests and all incidentals to make the work complete.

##### 1.02 WORK INCLUDED

- A. Testing of topsoil.
- B. Raking and leveling topsoil as required for sodding.
- C. Liming and fertilizing of topsoil.
- D. Laying and rolling of sod.
- E. Maintaining

##### 1.03 SUBMITTALS

- A. Submit product source and information sheets in accordance with Section 01300, Submittals.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Fertilizer
  - 1. Fertilizer shall be commercial fertilizer, as manufactured by International Chemical Company or equal.
  - 2. Said fertilizer shall have a 10-20-6 N.P.K. content and contain a minimum of 60% of organic material or as otherwise approvable to the City.
  - 3. It shall be delivered at the site in the original sealed containers.

B. Sod

1. Sod from right-of-way swales within the work area shall be Bahia sod or replaced in-kind, whichever is finer quality.
2. Sod shall be first quality Bahia sod of firm texture having a compacted growth and good root development.
3. Sod shall be absolutely true to varietal type, live, fresh and free from weeds or objectionable vegetation, fungus, insects and disease of any kind. Sod shall be kept moist from the time it is field cut until it is laid at the proposed site.
4. The sod shall be as grown by a certified turf nursery and Contractor shall inform Engineer as to the source of the sod to be utilized prior to ordering and delivery of sod.
5. Sod shall be furnished and installed in rectangular sod strips measuring 12 to 16-inches in width of standard lengths of not less than 2 feet and delivered on pallets.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Sod shall be placed on all grassed areas disturbed by construction activities, unless otherwise indicated on the Drawings. Sodding shall be in accordance with these specifications and Sections 570 and 981 of FDOT Specifications, whichever is more stringent.
- B. These areas shall be fine graded to achieve the finished subgrade after compaction which shall be obtained by rolling, dragging or by an approved method which obtains an equivalent compaction to that produced by a hand roller weighing from 75 to 100 pounds per foot of width. All depressions caused by settlement or rolling shall be filled with additional existing or furnished topsoil and regraded and prepared as specified above until it presents a reasonably smooth and even finish at the required sod sub-grade.
- C. All sod furnished shall be living sod containing at least 70% of thickly matter grasses as specified and free from noxious weeds. All sod shall be certified free of fire ants.
- D. No broken pads or torn or uneven ends will be accepted. Standard size sections of sod shall be strong enough to support own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10% of the section. Sod shall not be harvested when its moisture content (excessively wet or dry) may adversely affect its survival.

- E. Sod shall be harvested, delivered, and installed within a period of 24 hours. Sod not installed within this time period shall be subject to inspection and rejection by Engineer and shall be removed from the site and a fresh sod supply shall be furnished at no extra cost to City.
- F. The topsoil shall not be moist at time of installation; however, it shall contain sufficient moisture so as not be powdery or dusty, both as determined by the supplier's representative.
- G. The overlapping of existing lawn with new sod along limit of work lines will not be permitted. Sod shall be laid in strips, edge to edge, with the lateral joints staggered. All minor or unavoidable openings in the sod shall be closed with sod plugs or with topsoil, as directed by Engineer. However, sod laid with joints determined to be too large shall be lifted and re-laid as specified herein at no extra cost to City.
- H. Immediately after the sod is laid, the sod shall be watered thoroughly by hand or mechanical sprinkling until the sod and at least 2-inch of the topsoil bed have been thoroughly moistened.
- I. Contractor shall be responsible to furnish his own supply of water to the site at no extra cost. If possible, City shall furnish Contractor, upon request, with a source and supply of water. Contractor shall apply for temporary meter and pay City for water used at current utility billing rates. However, if City's water supply is not available or not functioning, Contractor shall be responsible to furnish adequate supplies at his own cost. All work injured or damaged due to the lack of, or the use of too much water, shall be Contractor's responsibility to correct.

### 3.02 MAINTENANCE

- A. Maintain the entire sodded areas at least a 30-day period or until final acceptance at the completion of the Contract, whichever is longer. Maintenance shall include watering as specified, weeding and removal of stones which may appear. All bare or dead spots which become apparent shall be properly prepared, limed, and fertilized, and resodded at Contractor's expense as many times as necessary to secure a good growth. In the event that the sod installation is not accepted by Engineer, the entire area shall be maintained and cut by Contractor until final acceptance of the sod installation.
- B. Take whatever measures are necessary to protect the sod while it is developing. These measures shall include furnishing of warning signs, barriers, or any other necessary measures of protection.

END OF SECTION



# **DIVISION 3**

# **CONCRETE**

SECTION 03111  
CONCRETE FORMWORK

PART 1 - GENERAL

A. Description

1. This section describes materials and installation of concrete forms.

B. Related Work Specified Elsewhere

1. Submittals: Section 01300.
2. Leakage Testing of Hydraulic Structures: Section 03051 .
3. Concrete Joints, Water Stops, and Sealants: Section 03151 .
4. Concrete Reinforcement: Section 03210 .
5. Concrete: Section 03300.
6. Concrete Finishing and Curing: Section 03350.

C. Submittals

1. Submit shop drawings in accordance with the General Conditions and Section 01300.
2. Submit manufacturer's literature for form ties, spreaders, corner formers, form coatings, and bond breakers.

PART 2 - MATERIALS

A. Form Construction and Design

1. Design formwork in conformance with methodology of ACI 347R for anticipated loads, lateral pressures, depth of concrete placement and rate of concrete placement.
2. Locate bracing and shoring to maintain form stability and comply with finish tolerances specified.
3. Provide temporary openings in wall and column forms to facilitate cleaning, inspection and concrete placement.



4. Provide drop chutes and/or drop pipes to prevent accumulation of hardened concrete on forms and reinforcement above fresh concrete and to prevent concrete segregation.
5. Construct forms with regard for construction and expansion joint locations and architectural lines.
6. Use panels as large as practical to minimize form seam lines.
7. Construct forms to minimize fines leakage during concrete placement at construction joints, bulkheads, base of wall/slab intersections and other areas where fines may migrate from the concrete surface during placement. The level of acceptable fine leakage from the formed surface shall be determined by the Engineer as evidenced by the lack of rock pockets formed during placement of the concrete.
8. Provide form windows or stage forms to allow visual observation at all times of the concrete being placed and vibrated. Provide a formwork design and placement schedule that will limit free fall of concrete in walls 8 inches or less in thickness to 4 feet and for walls thicker than 8 inches, limit this fall to 6 feet. Total vertical lift made in a single pass shall not exceed 2 feet in height.
9. Notify the Owner's Representative prior to concrete placement (48 hours minimum).
10. Steel forms shall be minimum 24 gauge, with tongue-and-groove joints, complete with steel stakes and splice plates.
11. Provide material for forms that is not reactive with concrete. Formwork of aluminum is not acceptable.
12. Expandable metal mesh shall not be used in formwork.

B. Classes of Forms

1. Class I Forms: Use steel forms, ply form, or smooth-surface plywood 3/4-inch minimum thickness for straight surfaces and 1/2-inch minimum thickness for curved surfaces.
2. Class II Forms: Use plywood in good condition, metal, or smooth-planed boards free from large or loose knots with tongue-and-groove or ship-lap joints.
3. Class II forms may be used for exterior concrete surfaces that are 1 foot or more below finished grade. Use Class I forms for all other surfaces.

C. Form Material

1. Use plywood, lumber, and steel of sufficient strength and surface smoothness to produce the specified finish.

2. Lumber used in form construction shall be Southern Yellow Pine, No. 2, S4S, Standard Grade Rules Southern Pine Inspection Bureau. Boards shall be 6 inches or more in width.
3. Plywood used in form construction shall be Grade B-B, Class 1 plyform, mill-oiled, and sanded on both sides in conformance with U.S. Product Standard PS-1.

D. Form Ties

1. Locate form ties on exposed surfaces in a uniform pattern or as indicated in the drawings. Place form ties so they remain embedded in the concrete except for a removable portion at each end and do not leave an open hole through the concrete. Form ties shall have conical or spherical type inserts with a maximum diameter of 1 inch. Construct form ties so that no metal is within 1 inch of the concrete surface when the forms, inserts, and tie ends are removed. Do not use wire ties. Ties shall withstand all pressures and maintain forms within acceptable deflection limits.
2. Flat bar ties for panel forms shall have plastic or rubber inserts having a minimum depth of 1 inch and sufficient dimensions to permit patching of the tie hole.
3. Ties for water-holding structures or dry structures with access, such as basements or pipe galleries, that are below finish grade shall have an integral steel water stop that is tightly and continuously welded to the tie. The water stop shall be at least two times larger in area than the tie cross-sectional area and shall be oriented perpendicular to the tie and symmetrical about the center of the tie. Construct the ties to provide a positive means of preventing rotation or disturbance of the center portion of the tie during removal of the ends.
4. Tapered form ties shall be tapered through-bolts at least 1 inch in diameter at smallest end or through-bolts that utilize a removable tapered sleeve of the same minimum size.

E. Bond Breaker

1. Bond breaker shall be a V.O.C.-compliant nonstaining type that will provide a positive bond prevention, such as Clean Lift 90 W.B. as manufactured by Edoco Burke; Silcoseal 97EC as manufactured by Nox-Crete, Inc.; or equal.
2. Bond breaker shall be certified as meeting the requirements of ANSI/NSF 61 for contact with potable water.

F. Form Release Agent

1. Form releasing agents shall be certified as meeting the requirements of ANSI/NSF 61 for contact with potable water.

2. Form release agent shall effectively prevent absorption of moisture by the form and prevent bond with the concrete. Agent shall be nonstaining, V.O.C.-compliant, leave concrete with a coatable surface, and be nontoxic after 30 days.
3. For steel forms, release agent shall prevent discoloration of the concrete due to rust.

### PART 3 - EXECUTION

#### A. Form Tolerances

1. The following table indicates tolerances or allowable variations from dimensions or positions of structural concrete work:

	<b>Maximum Tolerance (inch)</b>
Sleeves and inserts	+1/4 -1/4
Projected ends of anchors	+1/4 -0.0
Anchor bolt setting	+1/4 -1/4
Finished concrete, all locations	+1/4 -1/4 in 10 feet
	Max ±1-inch in total length

2. The planes or axes from which the above tolerances are to be measured shall be as follows:

Sleeves and inserts:	Centerline of sleeve or insert.
Projected ends of anchors:	Plane perpendicular to the end of the anchor as located in the drawings.
Anchor bolt setting:	Centerline of anchor bolt.
Finish concrete:	The concrete surface as defined in the drawings.

3. Where equipment is to be installed, comply with manufacturer's tolerances if more restrictive than above.

4. Failure of the forms to produce the specified concrete surface and surface tolerance shall be grounds for rejection of the concrete work. Rejected work shall be repaired or replaced at no additional cost to the Owner.

B. Form Surface Preparation

1. Clean form surfaces to be in contact with concrete of foreign material prior to installation. Tape, gasket, plug, and/or caulk joints, gaps, and apertures in forms so that the joint will remain watertight and withstand placing pressures without bulging outward or creating surface irregularities.
2. Coat form surfaces in contact with concrete with a form release agent prior to form installation.
3. Keep form coatings off steel reinforcement, items to be embedded, and the previously placed concrete.
4. Coat face and edges of Class I forms with a two-coat system of one-component polyurethane coating applied by roller at the rate of 500 square feet per gallon.

C. Beveled Edges (Chamfer)

1. Form 3/4-inch beveled edges on exposed concrete edges and corners, beam soffit corners, and where indicated in the drawings. Reentrant corners in concrete members shall not have fillets, unless otherwise shown in the drawings. The top edges of slabs, walkways, beams, and walls may be beveled with an edging trowel in lieu of using chamfer strips.

D. Form Placement

1. Provide means for holding adjacent edges and ends of form panels tight and in accurate alignment to prevent the formation of ridges, fins, offsets, or similar surface defects in the finished concrete. Forms shall be tight and shall prevent the loss of mortar and fines during placing and vibration of concrete.
2. Provide one cleanout and inspection opening (12 inches wide by 18 inches high) every 7 feet at the bottom of each lift of forms.
3. Provide exterior corners in concrete members with bevels as specified.
4. Provide means for removing forms without injury to the surface of finished concrete.
5. Do not embed any form-tying device or part thereof other than metal in the concrete.
6. Locate large end of taper tie on the "wet" side of the wall.

7. Use only form or form-tying methods that do not cause spalling of the concrete upon form stripping or tie removal.
8. Form surfaces of concrete members except where placement of the concrete against the ground is shown in the drawings or as indicated below. The dimensions of concrete members shown in the drawings apply to formed surfaces, except where otherwise indicated. Add 2 inches of concrete where concrete is placed against trimmed undisturbed ground in lieu of forms. Placement of concrete against the ground shall be limited to footings and other nonexposed concrete and only where the character of the ground is such that it can be trimmed to the required lines and will stand securely without caving or sloughing.

E. Form Reuse

1. Reuse only forms that provide a uniform surface texture on exposed concrete surfaces. Apply light sanding or other surface treatment between uses for uniform texture. Plug unused tie rod holes with corks, shave flush, and sand the concrete surface side. Do not patch forms other than filling tie rod holes, except in the case of Class II forms. Do not use metal patching discs on Class I forms.

F. Removal of Forms

1. Forms and shoring for elevated structural slabs or beams shall remain in place until the concrete has reached a compressive strength equal to the specified 28-day compressive strength as determined by test cylinders. Do not remove supports and reshore. The following table indicates the minimum allowable time after the last cast concrete is placed before forms, shoring, or wall bracing may be removed:

Sides of footings and encasements	24 hours
Walls, vertical sides of beams, girders, columns, and similar members not supporting loads	48 hours
Slabs, beams, and girders	10 days (forms only)
Shoring for slabs, beams, and girders	Until concrete strength reaches specified 28-day strength
Wall bracing	Until top or roof slab concrete reaches specified 28-day strength

2. Do not remove forms from concrete that has been placed with outside air temperature below 50°F without first determining if the concrete has properly set without regard for time. Do not apply heavy loading on green concrete.

Immediately after forms are removed, the surface of the concrete shall be carefully examined and any irregularities in the surface shall be repaired and finished as specified.

G. Formed Openings

1. Openings shall be of sufficient size to permit final alignment of pipes or other items without deflection or offsets of any kind. Allow space for packing where items pass through the wall to ensure watertightness. Provide openings with continuous keyways and water stops. Provide a slight flare to facilitate grouting and the escape of entrained air during grouting. Provide formed openings with reinforcement as indicated in the typical structural details. Reinforcing shall be at least 2 inches clear from the opening surfaces and encased items.

H. Embedded Items

1. Set anchor bolts and other embedded items accurately before placing concrete and hold securely in position until the concrete is placed and set. Check special castings, channels, or other metal parts that are to be embedded in the concrete prior to and again after placing concrete. Check nailing blocks, plugs, and strips necessary for the attachment of trim, finish, and similar work prior to placing concrete.

I. Pipes and Wall Spools Cast in Concrete

1. Install wall spools, wall flanges, and wall anchors before placing concrete. Do not weld, tie, or otherwise connect the wall spools or anchors to the reinforcing steel.
2. Support pipe and fabricated fittings to be encased in concrete on concrete piers or pedestals. Carry concrete supports to firm foundations so that no settlement will occur during construction.
3. Pipes or spools located below operating water level shall have water stop ring collars and shall be cast in place. Do not block out such piping and grout after the concrete section is cast. Pipes fitted with thrust rings shall be cast in place.

END OF SECTION

## SECTION 03300

### CONCRETE

#### PART 1 - GENERAL

##### A. Description

1. This section describes materials, mixing, testing, and placing of concrete and grout.

##### B. Related Work Specified Elsewhere

1. Leakage Testing of Hydraulic Structures: Section 03051.
2. Concrete Formwork: Section 03111.
3. Concrete Joints, Water Stops, and Sealants: Section 03151.
4. Concrete Reinforcement: Section 03210.
5. Concrete Finishing and Curing: Section 03350.

##### C. Submittals

1. Submit shop drawings in accordance with the General Conditions and Section 01300.
2. Prepare concrete and mortar mix designs and laboratory 7-day and 28-day compressive tests or submit test reports of 7- and 28-day compressive tests of the mix where the same mix has been used on two previous projects. Prepare mix designs in accordance with ACI 318, Chapters 4 and 5, except as modified herein. Submit mix design in writing for review by the Owner at least 15 days before placing of any concrete.
3. Provide results of drying shrinkage tests from trial concrete mixes by the Contractor's testing laboratory firm.
4. Provide certificate that cement used complies with ASTM C150 and these specifications.
5. Provide certificates that aggregates comply with ASTM C33 and contain less than 1% asbestos by weight or volume. State weathering region limits of coarse aggregates: severe, moderate, or negligible. State basis of determining that potential reactivity is negligible. Identify certifications and tests to actual materials to be used in the work. Provide additional tests and certifications for each change in material source. Provide an alternate material source of aggregate if tests indicate that aggregates are reactive or possess severe weathering potential. Submit gradation analysis with concrete mix designs.

6. Provide delivery tickets for ready-mix concrete or weighmasters certificate per ASTM C94, including weights of cement and each size aggregate and amount of water added at the plant and record of pours. Record the amount of water added on the job on the delivery ticket. Water added at the plant shall account for moisture in both coarse and fine aggregate.
7. Provide certificate of compliance with these specifications from the manufacturer of the concrete admixtures.
8. Provide epoxy bonding compound manufacturer's specific instructions for use. Provide manufacturer's certifications as to suitability of product to meet job requirements with regard to surface, pot life, set time, vertical or horizontal application, and forming restrictions.
9. Provide non-shrink grout manufacturer's certificate of compliance with these specifications and specific instructions for use.
10. Submit six copies of a report from a testing laboratory verifying that aggregate and gravel material contains less than 1% asbestos by weight or volume and conforms to the specified gradations and characteristics.
11. Plant Qualification: Submit certification from the National Ready Mixed Concrete Association or FDOT indicating compliance with the specified qualification requirements.
12. For potable water, provide certification that all materials used in grout, concrete, or the curing and repair of concrete, meet the requirements of ANSI/NSF 61 for contact with potable water.

D. Plant Qualification

1. Meet requirements of the Check List for Certification of Ready Mixed Concrete Production facilities of the National Ready Mixed Concrete Association and ASTM C94.

E. Standards

1. Unless otherwise indicated, materials, workmanship, and practices shall conform to the following standards:
  - a. FBC (Latest Edition).
  - b. ACI 301, "Structural Concrete for Buildings."



- c. ACI 318, "Building Code Requirements for Reinforced Concrete."
    - d. ANSI/NSF 61: "Drinking Water System Components-Health Effects."
  - 2. Where provisions of pertinent codes and standards conflict with this specification, the more stringent provisions govern.
- F. Shrinkage Tests
- 1. Perform drying shrinkage tests for the trial batch specified in the paragraph in Part 2 entitled "Trial Batch and Laboratory Tests."
  - 2. Drying shrinkage specimens shall be 4-inch by 4-inch by 11-inch prisms with an effective gauge length of 10 inches. Fabricate, cure, dry, and measure specimens in accordance with ASTM C157 modified as follows:
    - a. Remove specimens from molds at an age of 23 hours  $\pm 1$  hour after trial batching, place immediately in water at 70°F  $\pm 3$ °F for at least 30 minutes, measure within 30 minutes thereafter to determine original length, then submerge in saturated lime water at 73°F  $\pm 3$ °F. At age seven days, make measurement to determine expansion, expressed as a percentage of original length. This length at age seven days shall be the base length for drying shrinkage calculations (zero days' drying age).
    - b. Then, store specimens immediately in a humidity-controlled room maintained at 73°F  $\pm 3$ °F and 50%  $\pm 4$ % relative humidity for the remainder of the test. Make and report measurements to determine shrinkage expressed as percentage of base length separately for 7, 14, 21, and 28 days of drying after 7 days of moist curing.
  - 3. Compute the drying shrinkage deformation of each specimen as the difference between the base length (at zero days' drying age) and the length after drying at each test age. Compute the average drying shrinkage deformation of the specimens to the nearest 0.0001 inch at each test age. If the drying shrinkage of any specimen departs from the average of that test age by more than 0.0004 inch, disregard the results obtained from that specimen. Report results of the shrinkage test to the nearest 0.001% of shrinkage. Take compression test specimens in each case from the same concrete used for preparing drying shrinkage specimens. These tests shall be considered a part of the normal compression tests for the project. Allowable shrinkage limitations shall be as specified in Part 2.

## PART 2 - MATERIALS

### A. Nondomestic Cement and Additives

- 1. The use of nondomestic cement and additives in concrete may be permitted only after review of a written request to use such materials. The request to use

nondomestic materials shall include a chemical analysis that indicates the material meets the project specifications. Certifications that state the nondomestic materials meet the project requirements will not be accepted.

2. Test reports for concrete materials shall be current to within three months of inclusion into the project and shall be identifiable to the materials supplied.

B. Cement

1. Unless nondomestic cement has been approved, use domestic Portland cement that conforms to ASTM C150 and C595, Type IPMS or, in lieu of Type IPMS, provide a mixture of 80% Type II Portland cement and 20% pozzolan fly ash II/V or 20% Class F fly ash. Use Type III cement for high early strength concrete only for special locations and only when reviewed in advance by the Resident Project Representative. Use Type I cement for tremie concrete. Pozzolan or fly ash content of Type IPMS cement shall not exceed 20% of the total weight.
2. Use only one brand of cement in any individual structure. Use no cement that has become damaged, partially set, lumpy, or caked. Reject the entire contents of the sack or container that contains such cement. Use no salvaged or reclaimed cement.
3. Maximum tricalcium aluminate shall not exceed 8%. The maximum percent alkalis shall not exceed 0.6%.

C. Aggregates

1. Aggregates shall be natural rock, sand, or crushed natural rock and shall comply with ASTM C33, and shall contain less than 1% asbestos by weight or volume. Aggregates shall be free from any substances that will react with the cement alkalis, as determined by Appendix X-1 of ASTM C33.

D. Water and Ice

1. Use water and ice that is clean and free from objectionable quantities of organic matter, alkali, salts, and other impurities that might reduce the strength, durability, or otherwise adversely affect the quality of the concrete. Water shall not contain more than 500 mg/L of chlorides nor more than 500 mg/L of sulfate.

E. Color Additive for Exterior Electrical Duct Encasement

1. For exterior electrical duct concrete encasements, use a color additive for identification purposes: brick red "Colorfull" as manufactured by Owl Manufacturing Company, Arcadia, California; coral red "Chromix C-22" as manufactured by L. M. Scofield Company, Los Angeles, California; or equal. Add the color additive while the concrete is being mixed using the quantity per cubic yard of concrete recommended by the manufacturer for the class of concrete indicated.

F. Concrete Admixtures

1. Class A concrete shall contain an air-entraining admixture conforming to ASTM C260. Admixtures shall be Master Builders MB-AE 90, Sika AER, or equal.
2. Class A concrete shall contain a water-reducing admixture conforming to ASTM C494, Type A or D. It shall be compatible with the air-entraining admixtures. The amount of admixture added to the concrete shall be in accordance with the manufacturer's recommendations. Admixtures shall be Master Builders Pozzolith polymer-type normal setting, Plastocrete 161 or Plastiment, Sika Chemical Corporation, or equal.
3. Do not use any admixture that contains chlorides or other corrosive elements in any concrete. Admixtures shall be nontoxic after 30 days.

G. Fly Ash:

1. Provide fly ash conforming to the following requirements:
  - a. Class F fly ash conforming to ASTM C 618 for chemical and physical properties.
  - b. Supplemental requirements in percent:
    - (1) Maximum carbon content: 3%
    - (2) Maximum sulfur trioxide (SO<sub>3</sub>) content: 4%
    - (3) Maximum loss on ignition: 3%
    - (4) Maximum water requirement (as a percent of control): 100%
    - (5) Fineness, maximum retained on No. 325 sieve: 25%

H. Superplasticizer

1. Comply with ASTM C1017, Type 1 or 2.

I. Non-shrink Grout

1. Non-shrink grout shall conform to the Corps of Engineers Specification for Non-shrink Grout, CRD-621-83, and to these specifications. Use a non-gasliberating type, cement base, premixed product requiring only the addition of water for the required consistency. Grout shall be UPCON High Flow, Master Flow 713, or equal. Components shall be inorganic.

J. Ordinary Type Grout (Dry Pack)

1. One-part Portland cement to two parts sand (100% passing a No. 8 sieve). Add sufficient water to form a damp formable consistency.

K. Expansive Grout

1. Premixed, cementitious mixture with a minimum 28-day strength of 3,500 psi. Provide air-entraining admixture as recommended by the manufacturer.

L. Epoxy Grout

1. Mix the two components of epoxy bonding compound in compliance with the manufacturer's instructions.
2. Use sand that is oven dry and meets the following gradation requirements for epoxy grout.

Sieve Size	No. 8	No. 50	No. 100
% Passing	100	30 ±15	5 ±5

M. Epoxy Grout for Machinery Baseplate Installation

1. Epoxy grouts shall meet the following minimum requirements:
  - a. Creep shall be less than 0.005 in./in. when tested per ASTM C1181. The tests shall be at 70°F and 140°F with a load of 400 psi.
  - b. Linear shrinkage shall be less than 0.080% and thermal expansion less than  $17 \times 10^{-6}$  in./in./°F when tested per ASTM C531.
  - c. Compressive strength shall be a minimum of 12,000 psi after seven days when tested per ASTM C579, Method B.
  - d. Bond strength to Portland cement concrete shall be greater than 2,000 psi when tested per ASTM C882.
  - e. Epoxy grout shall pass the thermal compatibility test per ASTM C884 when overlayed on Portland cement concrete.
  - f. Determine tensile strength and modulus of elasticity per ASTM D638. The tensile strength shall not be less than 1,700 psi and the modulus of elasticity shall not be less than  $1.8 \times 10^6$  psi.
  - g. Determine gel time and peak exothermic temperature per ASTM D2471. Peak exothermic temperature shall not exceed 110°F when a specimen 6 inches in diameter by 12 inches high is used. Gel time shall be at least 150 minutes.

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Class	Type of Work	28-Day Minimum Compressive Strength (in psi)	W/C Ratio (Max)	Cement Content (in lbs per C.Y.)
A	Concrete for all structures and concrete not otherwise specified. Concrete fill at structure foundations, cradle, supports across pipe trenches.	4,000	0.44	564
B	Pavement	3,000	0.54	500
C	Floor grout, miscellaneous unreinforced concrete.	2,000	-	376
D	Precast concrete	5,000	0.40	630

4. Measure slump in accordance with ASTM C143. Slump shall be as follows:
  - a. Slab on grade or heavy sections wider (in plan view) than 3 feet: 4 inches maximum.
  - b. Footings, walls, suspended slabs, beams, and columns: 4 inches maximum.
  - c. Pavement: 2 inches maximum.
  - d. Floor grout: 4 inches maximum.
5. Proportion and produce the concrete to have a maximum slump as shown; slump is prior to addition of superplasticizer. A tolerance of up to 1 inch above the indicated maximum shall be allowed for individual batches provided the average for all batches or the most recent 10 batches tested, whichever is fewer, does not exceed the maximum limit. Concrete of lower than usual slump may be used provided it is properly placed and consolidated.
6. Aggregate size shall be 3/4 inch maximum for slabs and sections 8 inches thick and less. Aggregate size shall be 1 inch maximum for sections greater than 8 inches and less than 17 inches. Aggregate size shall be 1-1/2 inches maximum for all larger slabs and sections. Aggregate size for floor grout shall be maximum 3/8 inch.

7. Combined aggregate grading shall be as shown in the following table:

	Maximum Aggregate Size			
	1-1/2"	1"	3/4"	3/8"
Aggregate Grade per ASTM C33	467	57	67	8

8. Mix design for pumped concrete shall produce a plastic and workable mix. The percentage of sand in the mix shall be based on the void content of the coarse aggregate.

R. Granular Base

1. Use structural backfill material as specified in Section 02222.

S. Trial Batch and Laboratory Tests

1. Before placing any concrete, a testing laboratory designated by the Contractor shall prepare a trial batch of Class A concrete, based on the preliminary concrete mixes submitted. Concrete shall conform to the requirements of this section. Prepare the trial batch using the aggregates, cement, and admixture proposed for the project. The cost of laboratory trial batch tests will be borne by the Contractor. Perform trial batch testing at no additional cost to the Owner.

T. Shrinkage Limitation

1. The maximum concrete shrinkage for specimens cast in the laboratory from the trial batch, as measured at 21-day drying age or at 28-day drying age, shall be 0.036% or 0.042%, respectively. Use a mix design for construction that has first met the trial batch shrinkage requirements. Shrinkage limitations apply only to Class A concrete.
2. If the trial batch specimens do not meet the shrinkage requirements, revise the mix design and/or materials and retest.

U. Workability

1. Concrete shall be of such consistency and composition that it can be worked readily into the forms and around the reinforcement without excessive vibrating and without permitting the materials to segregate or free water to collect on the surface.
2. The proportions shall be adjusted to secure a plastic, cohesive mixture, and one that is within the specified slump range.

3. To avoid unnecessary changes in consistency, obtain the aggregate from a source with uniform quality, moisture content, and grading. Handle materials to minimize variations in moisture content that would interfere with production of concrete of the established degree of uniformity and slump.

### PART 3 - EXECUTION

#### A. Site-Mixed Concrete

1. Conform to ACI 304 as modified by these specifications.
2. Use a batch-type mixer capable of combining the aggregates, cement, and water within the specified time into a thoroughly mixed and uniform mass and capable of discharging the mixture without segregation.
3. Use equipment that can accurately proportion cement, coarse and fine aggregates, admixtures, and water. Proportion cement and aggregate by weight.
4. Discharge each entire batch before recharging. Do not allow any batch to exceed the manufacturer's rated capacity of the mixer.
5. Mixing time shall be as follows:
  - a. For mixer of a capacity of 1 cubic yard or less, one and one-half minutes after batching is completed.
  - b. For mixers of capacities larger than 1 cubic yard, one and one-half minutes plus one-half minute for each additional 1/2-cubic-yard capacity or fraction thereof in excess of 1 cubic yard.
  - c. The mixer shall revolve at a uniform rate as specified by the manufacturer for the mixing equipment.

#### B. Ready-Mixed Concrete

1. Provide ready-mixed concrete conforming to ASTM C94 as modified by these specifications.
2. Convey concrete from the truck to the place of final deposit as rapidly as practicable by methods that will prevent segregation or loss of ingredients to maintain the quality of the concrete. Place no concrete more than 90 minutes after mixing has begun for that particular batch. If it is necessary to add water to obtain the specified slump, add water per ASTM C94, but do not exceed the water content of the reviewed design mix.



3. Use dry-batched concrete or jobsite mix only when haul time is excessive. Do not retemper partially hardened concrete.
4. Keep a record showing time and place of each pour of concrete, together with transit-mix delivery slips certifying the contents of the pour.

C. Prior to Placing Concrete

1. Subgrade: Compact the subgrade and/or bedding. Saturate the subgrade approximately eight hours before placement and sprinkle ahead of the placement of concrete in areas where vapor barrier is not used. Remove all standing water, mud, and foreign matter before concrete is deposited.
2. Contractor has the option to provide mud slabs to obtain a dry and stable working platform for placement of slabs.
3. Granular Base: When indicated in the drawings, install a granular base beneath the slab on grade or a structural foundation. Place the granular material on a compacted subgrade and compact the granular base to the same density as the subgrade.
4. Vapor Barrier: Place under structural slabs and buildings and where indicated in the drawings. Lay vapor barrier sheets as described in Section 071119. Stretch and weight edges and laps to maintain their positions until concrete is placed.

D. Placing Concrete

1. Placement shall conform to ACI 304 as modified by these specifications.
2. Coordinate in advance of concrete placement the sequence of placement to assure that construction joints will occur only as designed. Provide Owner's Representative with a copy of the sequence of placement in advance of placement.
3. Alternate sections of concrete walls and slabs may be cast simultaneously. Do not place adjacent sections of walls and slabs until seven days after placement of first placed concrete.
4. Notify the Owner's Representative of readiness, not just intention, to place concrete in any portion of the work. This notification shall be such time in advance of the operation as the Owner's Representative deems necessary to allow observation of the work at the location of the proposed concrete placing. Failure of sufficient advance notification will be cause for delay in placing until observations can be completed. Forms, steel, screeds, anchors, ties, inserts, and other embedded items shall be in place before the Contractor's notification of readiness is given.
5. Schedule sufficient equipment for continuous concrete placing. Provide for backup equipment and procedures to be taken in case of an interruption in

placing. Provide backup concrete vibrators at the project site. Test concrete vibrators the day before placing concrete.

6. Do not place concrete until all free water has been removed or has been diverted by pipes or other means and carried out of the forms, clear of the work. Do not deposit concrete underwater, and do not allow free water to rise on any concrete until the concrete has attained its initial set. Do not permit free or storm water to flow over surfaces of concrete so as to injure the quality or surface finish.
7. Where a vapor barrier is installed, do not puncture the vapor barrier by stakes or any other concrete accessory. Repair any holes in the vapor barrier by patching before placing concrete.
8. Deposit concrete at or near its final position to avoid segregation caused by rehandling or flowing. Do not deposit concrete in large quantities in one place to be worked along the forms with a vibrator.
9. Use mechanical vibration in placing concrete to eliminate rock pockets and voids, to consolidate each layer with that previously placed, to completely embed reinforcing bars and fixtures, and to bring just enough fine material to exposed surfaces to produce a smooth, dense, and even texture. Vibrators shall be of the high-frequency internal type, and the number in use shall be ample to consolidate the incoming concrete to a proper degree within 15 minutes after it is deposited in the forms. In all cases, at least two vibrators shall be available at the site. Use external vibrators for consolidating concrete when the concrete is otherwise inaccessible for adequate consolidating. Construct forms with sufficient strength to resist displacement or damage when external vibrators are used.
10. Do not place concrete during rainstorms. Protect concrete placed immediately before rainstorms to prevent rainwater from coming in contact with freshly placed or uncured concrete. Always keep sufficient protective covering ready for this purpose.
11. Elephant Trunks: Use hoppers and elephant trunks or drop chutes to prevent the free fall of concrete that results in separation of coarse particles.
12. Chutes: Use metal or metal-lined chutes with a slope not exceeding one vertical to two horizontal and not less than one vertical to three horizontals. Chutes more than 20 feet long and chutes not meeting the slope requirement may be used only if they discharge into a hopper before distribution.
13. Deposit concrete continuously and in level layers of such thickness (not exceeding 2 feet in depth) so that no concrete will be deposited on concrete that has hardened sufficiently to cause the formation of seams, planes of weakness, or cold joints.

E. Time Between Pours

1. At least two hours shall elapse after depositing concrete in the columns or walls before depositing in beams, girders, or slabs supported thereon. Place beams, girders, brackets, column capitals, and haunches monolithically as part of the floor or roof system, unless otherwise indicated in the drawings.

F. Maximum Height of Concrete Pours and Free Fall

1. Do not drop concrete freely into place from a height greater than 6 feet in unexposed work and 4 feet in exposed work. Use tremies or pumps where the drop exceeds these limits. See Section 03111 also.

G. Pumping Concrete

1. Conform to the recommendations of ACI 304.2R except as modified herein.
2. Base pump size on rate of concrete placement, length of delivery pipe or hose, aggregate size, mix proportions, vertical lift, and slump of concrete.
3. Minimum inside diameter of pipe or hose shall be based on the maximum aggregate size as follows:
  - a. 3/4-inch-maximum aggregate: 2 inches minimum inside diameter.
  - b. 1-1/2-inch-maximum aggregate: 4 inches minimum inside diameter.
4. Do not use aluminum pipes for delivery of concrete to the forms.
5. Before pumping is started, prime the delivery pipe or hose by pumping mortar through the line using 5 gallons of mortar for each 50 feet of delivery line. Do not deposit mortar in the forms.

H. Hot Weather Requirements

1. During hot weather, give proper attention to ingredients, production methods, handling, placing, protection, and curing to prevent excessive concrete temperatures or water evaporation in accordance with ACI 301, ASTM C94, and the following.
2. When the weather is such that the temperature of the concrete as placed would exceed 90°F, use ice or other means of cooling the concrete during mixing and transportation so that the temperature of the concrete as placed will not exceed 90°F.
3. Take precautions when placing concrete during hot, dry weather to eliminate early setting of concrete. This includes protection of reinforcing from direct sunlight to prevent heating of reinforcing, placing concrete during cooler hours of the day, and the proper and timely application of specified curing methods.

4. There will be no additional reimbursement to the Contractor for costs incurred for placing concrete in hot weather.

I. Cold Weather Requirements

1. Provide adequate equipment for heating concrete materials and protecting concrete during freezing or near-freezing weather in accordance with ACI 306 and the following.
2. When the temperature of the surrounding atmosphere is 40°F or is likely to fall below this temperature, use heated mixing water not to exceed 140°F. Do not allow the heated water to come in contact with the cement before the cement is added to the batch.
3. When placed in the forms during cold weather, maintain concrete temperature at not less than 55°F. All materials shall be free from ice, snow, and frozen lumps before entering the mixer.
4. Maintain the air and the forms in contact with the concrete at temperatures above 40°F for the first five days after placing, and above 35°F for the remainder of the curing period. Provide thermometers to indicate the ambient temperature and the temperature 2 inches inside the concrete surface.
5. There will be no additional reimbursement made to the Contractor for costs incurred for placing concrete during cold weather.

J. Bonding to Old Concrete

1. Coat the contact surfaces with epoxy bonding compound. The method of preparation and application of the bonding compound shall conform to the manufacturer's printed instructions and recommendations for specific application for this project.

K. Grouting Machinery Foundations

1. Block out the original concrete or finish off a sufficient distance below the bottom of the machinery base to provide for the thickness of grout shown on the drawings. After the machinery has been set in position and placed at the proper elevation by steel wedges, the space between the bottom of the machinery base and the original pour of concrete shall be filled with a pourable non-shrink grout. Grout and grouting procedure shall be in accordance with API 686, Chapter 4, paragraphs 3.6 and 3.7, and Chapter 5.

L. Backfill Against Walls

1. Do not place backfill against walls until the concrete has obtained a compressive strength equal to the specified 28-day compressive strength. Where backfill is to be placed on both sides of the wall, place the backfill uniformly on both sides.

2. Do not backfill the walls of structures that will be laterally restrained or supported by suspended slabs or slabs on grade until the slab is poured and the concrete has reached the specified compressive strength.

M. Concrete Tests

1. Concrete quality testing will be performed on the concrete by the Contractor per Section 01400, Testing and Inspection and as follows:
  - a. Frequency of Sampling: Cast four concrete test cylinders from each 50 cubic yards, or fraction thereof, of each class of concrete placed in any one day. Sampling and curing of cylinders shall conform to ASTM C31.
  - b. Strength Testing: Test cylinders in accordance with ASTM C39. Test one cylinder at 7 days for information; test two cylinders at 28 days for acceptance; and hold one cylinder for verification. Strength acceptance will be based on the average of the strengths of the two cylinders tested at 28 days. If one cylinder of a 28-day test manifests evidence of improper sampling, molding, or testing, other than low strength, discard it and use the fourth cylinder for the test result.
  - c. Determine concrete slump by ASTM C143 with each strength test sampling and as required to establish consistency.
  - d. Determine air content of the concrete using ASTM C231 to verify the percentage of air in the concrete immediately prior to depositing in forms.
  - e. Concrete acceptance shall be based on the requirements of ACI 318.
2. To facilitate concrete sampling and testing, the Contractor shall:
  - a. Furnish labor to assist the Owner in obtaining and handling samples at the project site.
  - b. Advise the Owner in advance of concrete placing operations to allow for scheduling and completion of quality testing.
  - c. Provide and maintain facilities for safe storage and proper curing of concrete test specimens on the project site, as required by ASTM C31.

END OF SECTION

## SECTION 03350

### CONCRETE FINISHING AND CURING

#### PART 1 - GENERAL

##### A. Description

1. This section describes materials and methods of concrete finishes, curing, repair of defects, and surface protection.

##### B. Related Work Specified Elsewhere

1. Leakage Testing of Hydraulic Structures: Section 03051.
2. Concrete Formwork: Section 03111.
3. Concrete Joints, Water Stops, and Sealants: Section 03151.
4. Concrete Reinforcement: Section 03210.
5. Concrete: Section 03300.

##### C. Submittals

1. Submit shop drawings in accordance with the General Conditions and Section 01300.
2. Submit curing compound manufacturer's statement of compliance with these specifications and recommended coverage to meet or exceed the specified tests. Submit manufacturer's application instructions.

#### PART 2 - MATERIALS

##### A. Epoxy Bonding Compound

1. See Section 03300.

##### B. Curing Compound

1. Curing compound shall conform to ASTM C309, Type 1-D, Class A.
2. Curing compound shall be compatible with required finishes and coatings.

##### C. Mortar for Repair of Concrete

1. Mortar used for repair of concrete shall be made of the same materials as used for concrete, except that the coarse aggregate shall be omitted and the mortar

shall consist of not more than one part cement to two and one-half parts sand by damp loose volume. The quantity of mixing water shall be no more than necessary for handling and placing.

D. Clear Floor Hardener (Surface Applied)

1. Floor hardener shall be a colorless, aqueous solution of zinc and/or magnesium fluosilicate. Each gallon of the fluosilicate solution shall contain not less than 2 pounds of crystals. Hardener shall be Mastertop CST, a product of Master Builders Company, Cleveland, Ohio; Burke-O-Lith, a product of Edoco Burke Company; or equal. The solution shall be delivered ready for use in the manufacturer's original sealed containers.

E. Burlap Mats

1. Conform to AASHTO M182.

F. Sisal-Kraft Paper and Polyethylene Sheets for Curing

1. Conform to ASTM C171.

G. DUSTPROOF/SEALER (DPS):

1. Manufacturers:
  - a. Armorseal Rexthane 1 manufactured by Sherwin Williams.
  - b. Duraguard 300HS manufactured by ChemMasters.
  - c. Eucothane manufactured by the Euclid Chemical Company.
  - d. Or acceptable equivalent product.
2. Provide a high solid, single component, moisture cure urethane with VOC compliance.
3. Provide surface primer in accordance with manufacturer's printed instructions.
4. Colors to be selected by Engineer.

## PART 3 - EXECUTION

### A. Concrete Finishes

1. Finish concrete surfaces in accordance with the following schedule:

Finish Designation	Area Applied
F-1	Beams, columns, and exterior walls not exposed to water or view.
F-2	Exterior and interior walls, beams, and columns exposed to water, unless such items are to be coated.
F-3	Walls, beams, and columns of structures or buildings exposed to view and to 1 foot below water level or finished grade. Underside of formed floors or slabs. EXCEPTION: surfaces that are to be coated.
F-4	Exterior and interior surfaces to be coated.
S-1	Slabs and floors to be covered with concrete or grout.
S-2	Slabs and floors not water bearing.
S-3	Slab surfaces on which mechanical equipment moves. Slab surfaces to receive hardener.
S-4	Slabs and floors of structures or buildings exposed to view, which are water bearing, or to receive crystalline waterproofing.
S-5	Slabs and floors at slopes greater than 10% and stairs.
E-1	Exposed edges. EXCEPTION: edges normally covered with earth.
E-2	Top of walls, beams, and similar unformed surfaces.

2. Finish F-1: Repair defective concrete, fill depressions deeper than 1/2 inch, and fill tie holes.
3. Finish F-2: Repair defective concrete, remove fins, fill depressions 1/4 inch or deeper, and fill tie holes.
4. Finish F-3: In addition to Finish F-2, fill depressions and airholes with mortar. Dampen surfaces and then spread a slurry consisting of one-part cement and one and one-half parts sand by damp loose volume, over the surface with clean burlap pads or sponge rubber floats. Remove any surplus by scraping and then rubbing with clean burlap.
5. Finish F-4: Repair defective concrete, remove fins, fill depressions 1/16 inch or deeper, fill tie holes, remove mortar spatter, and remove bulges higher than 1/16 inch.
6. Finish S-1: Screed to grade without special finish.



7. Finish S-2: Smooth steel trowel finish.
8. Finish S-3: Steel trowel finish free from trowel marks and all irregularities.
9. Finish S-4: 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.
10. Finish S-5: 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.
11. Finish E-1: Provide chamfer or beveled edges per Section 03111 .
12. Finish E-2: Strike smooth and float to an F-3 or F-4 finish.

B. Finishing of Formed Surfaces

1. Water cure surfaces until finishing and repairing are completed.
2. Perform finish work as soon as possible after forms are removed. Remove fins and irregularities by grinding or rubbing, fill depressions deeper than specified with mortar, and fill tie holes.
3. Ream tie holes with toothed reamers until surface of hole is rough and clean. Coat surface with epoxy bonding compound and fill with mortar.
4. Finish tapered tie holes as follows:
  - a. Sandblast tie rod hole and blow clean prior to filling.
  - b. Drive rubber plug, with one end open, to the center of the hole. Plug size shall be larger in diameter than the diameter of the hole at the center of the wall.
  - c. Coat entire annular surface of the hole with epoxy prior to filling with mortar. Apply epoxy in accordance with manufacturer's instructions.
  - d. Fill each side of hole with mortar. Apply mortar to the "wet" side of the wall first. Consolidate mortar solidly into the hole.
  - e. Notify Owner's Representative of tie rod filling schedule.

C. Repair of Defects

1. Do not repair defects until concrete has been reviewed by the Owner's Representative.

2. Surface Defects:

- a. Repair surface defects that are smaller than 1 foot across in any direction and are less than 1/2 inch in depth.
- b. Repair by removing the honeycombed and other defective concrete down to sound concrete, make the edges perpendicular to the surface and at least 3/8 inch deep, thoroughly dampen the surface, work into the surface a bonding grout (one part cement to one part fine sand), fill the hole with mortar, match the finish on the adjacent concrete, and cure as specified.

3. Severe Defects:

- a. Repair severe defects that are larger than surface defects but do not appear to affect the structural integrity of the structure.
- b. Repair by removing the honeycombed and other defective concrete down to sound concrete, make the edges of the hole perpendicular to the surface, sandblast the surface, coat the sandblasted surface with epoxy bonding compound, place nonshrink grout as specified in Section 03300, match the finish on the adjacent concrete, and cure as specified.

4. Major Defects: If the defects are serious or affect the structural integrity of the structure or if patching does not satisfactorily restore the quality and appearance to the surface, the Owner's Representative may require the concrete to be removed and replaced, complete, in accordance with the provisions of this section.

D. Repair of Cracks in Concrete

1. Repair concrete cracks in liquid containment structures that are greater than 0.01 inch and less than 0.1 inch in width by epoxy pressure injection. Epoxy pressure injection shall be Sikadur 52, or equal.
  - a. Preparation: Insert and anchor a one-way polyethylene valve or pipe nipple in holes drilled into crack. Position them every 6 inches or 18 inches on center depending on the width of the crack. The injecting operation for vertical cracks shall consist of pumping the epoxy grout into the lowest position first and working vertically up in the cracks. Maintain a slow, steady pressure rather than a rapid buildup of pressure. When grouting material reaches the next tube, stop off the present position and follow the same procedure on the next position.
  - b. Upon completion of the epoxy grouting, remove the epoxy gel used to hold the valve or nipple by applying a direct flame to the epoxy and scraping it off. Fill the holes with the same material as used for patching the surface.

- c. While the valves or nipples are installed first, the grouting operation shall not commence until after the patchwork has been completed and has sufficiently cured.
2. Repair cracks in concrete structures that are wider than 1/10 inch by cutting out a square edged and uniformly aligned joint 3/8 inch wide by 3/4 inch deep, preparing exposed surfaces of the joint, priming the joint, and applying polyurethane joint sealant in accordance with Section 03151 .
3. If the cracks are serious or affect the structural integrity or function of the element, the Owner's Representative may require the concrete to be removed and replaced, complete, in accordance with the provisions of this section. Where concrete is removed or has spalled, wire brush the exposed rebar, if any, and apply Sika Armatex 110 or equal, before repairing the concrete.
4. After leakage testing per Section 03051, dewater the structure, repair leaking concrete cracks from inside the structure, and retest the structure.

**E. Curing and Protection**

1. Water cure cast-in-place concrete for liquid containment walls, slabs, channels, and footings by Method 1, 2, or 3 for a period of five days (minimum) prior to applying other curing methods. Do not submerge concrete placed 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 four days. Start curing of concrete as soon as possible without damaging surface and not later than two hours after placing.
2. Cure concrete surfaces in accordance with the methods specified herein for the different parts of the work and described in the following paragraphs. These methods are considered to be minimum for curing. The conditions that exist in the field during placement and curing may require additional curing procedures and efforts to ensure proper protection and curing of the concrete. Select and implement the appropriate method commensurate with climatic conditions.

<b>Curing Method</b>	<b>Area Permitted</b>
1	All surfaces.
2	All surfaces.
3	Slabs and floors.
4	All surfaces of non-hydraulic structures when maximum ambient temperature will not exceed 80°F and humidity will not drop below 40% on the day of concrete placement and for the three days following.

3. Where wooden forms are used, wet forms immediately before concreting and keep moist by sprinkling until removed. Keep exposed surfaces of formed concrete moist until commencement of curing.

4. Use proper concrete placing and curing methods at all times to limit the amount of crazing and cracking of the structures during initial setting and shrinking of the concrete. Repair cracks and coat with a cementitious crystalline waterproofing system .
5. Cure concrete for not less than 14 days after placing in accordance with one of the following methods.

- a. Method 1, Water Spray Method:

Tightly close off concrete surfaces to be cured by bulkheads or other means or entirely surround by tight enclosures, and keep the concrete surfaces moist by sprinkling, spraying, or other means.

- b. Method 2, Wet-Burlap-Mat Method:

- i. Thoroughly wet and cover concrete surfaces to be cured with wet burlap mats as soon as the forms have been stripped or as soon as the concrete has set sufficiently to avoid marring the surface. Keep entire concrete surface and burlap continuously and completely wet during the entire curing period.

- c. Method 3, Curing Blanket Method:

- i. Thoroughly wet concrete surfaces to be cured and cover with curing blankets as soon as the concrete has set sufficiently to avoid marring the surface. The curing blankets shall be weighted to maintain close contact with the concrete surface during entire curing period. Should the curing blankets become torn or otherwise ineffective, keep surfaces moist and replace damaged sections. The curing blankets shall consist of one of the following two types:
  - (1) Sheets of heavy waterproof sisal-kraft paper laid with the edges butted together and with the joints between strips sealed with 2-inch-wide strips of sealing tape or with the edges lapped not less than 3 inches and fastened together with waterproof cement to form continuous watertight joints; or
  - (2) Sheets of clean polyethylene, having a minimum thickness of 4 mils, layed with edges butted together, and with the joints between sheets sealed with 1-inch-wide strips of acetate tape.
  - (3) During the curing period, do not permit traffic of any nature or depositing of objects, temporary or otherwise, on the curing blankets.

d. Method 4, Curing Compound Method:

- i. Do not use curing compound on surfaces that are to be coated.
- ii. Spray the surface with two coats of liquid curing compound. Apply in accordance with the manufacturer's instructions to cover the surface with a uniform film that will seal thoroughly. Apply second coat at 90 degrees for the first coat.
- iii. Apply curing compound immediately after completion of the finish on unformed surfaces and within two hours after removal of forms on formed surfaces. Repair formed surfaces within the said two-hour period; provided, however, that any such repairs which cannot be made within the said two-hour period shall be delayed until after Method 1, 2, or 3 has been applied. When repairs are to be made to an area on which curing compound has been applied, first sandblast the area to remove the compound, then repair.
- iv. Wherever curing compound may have been applied to surfaces against which concrete subsequently is to be placed and to which it is to adhere, remove the curing compound entirely by sandblasting prior to the placing of new concrete.
- v. Where the curing compound method is used, exercise care to avoid damage to the seal during the curing period. Should the seal be damaged or broken before the expiration of the curing period, repair the damaged portions immediately by the application additional curing compound.

6. It is the responsibility of the Contractor to select the appropriate curing method in response to climatical and/or site conditions occurring at the time of concrete placement. Take appropriate measures as described in ACI 305 and 306 for protecting and curing concrete during hot and cold weather.

F. Clear Hardener Application (Surface Applied)

1. Cure, clean, and keep floors dry to receive hardener. Complete work immediately above floors prior to applying hardener. Apply hardener evenly, using three coats, allowing 24 hours between coats. The first coat shall be one-third strength, second coat one-half strength, and third coat two-thirds strength. Apply each coat so as to remain wet on the concrete surface for 15 minutes. Apply proprietary hardeners in conformance with the manufacturer's instructions. After the final coat is completed and dry, remove surplus hardener from the surface by scrubbing and mopping with water.
2. Apply hardener to the surfaces designated in the drawings.

G. Dustproof/Sealer (DPS):

1. Apply primer in accordance with manufacturer's printed instructions.
2. Give particular attention to priming of concrete substrate and time laps between coats when more than one conditioning coat is required.
3. Mix colored polyurethane dustproof/sealer surface treatment and apply to sound, fully cured, dry and thoroughly clean concrete slabs in strict accordance with manufacturer's printed instructions.
  - a. Total dry film thickness for both primer and topcoat shall be 4 mils.

END OF SECTION

## SECTION 03375

### FLOWABLE FILL

#### PART 1 - GENERAL

##### 1.01 SCOPE OF WORK

- A. The Section specifies the requirements for flowable fill used for trenches, support for pipe structures, culverts, utility cuts and other works where cavities exist and where firm support is needed for pavements and structural elements. Flowable fill may also be used to fill water and sewer lines, and fuel tanks placed out of service, and at other locations approved by the Engineer of Record.

#### PART 2 - PRODUCTS (NOT USED)

##### 2.01 MATERIALS

The materials used shall conform with the requirements specified in Division III of the F.D.O.T. Standard Specifications for Road and Bridge Construction, latest edition, and herein. Specific references are as follows:

- A. Portland Cement (Types I, II or III) .....Section 921
- B. Fly Ash, Slag and other Pozzolanic
- C. Materials for Portland Cement Concrete.....Section 929
- D. Fine Aggregate (Sand)\* ..... Section 902
- E. Water..... Section 923

\*Any clean sand with 100% passing 3/8" sieve and not more than 10% passing with 200 mesh may be used.

##### 2.02 MIX PROPORTIONS

- A. The Contractor shall be responsible for producing a flowable mixture using these guidelines and by adjusting his mixture design as called for by circumstances or as may be directed by the Engineer of Record.
- B. Excavatable flowable fill material shall be proportioned to produce a 28-day compressive strength of 100 psi.

- C. General mix quantities are as follows:

Components	Pounds per Cubic Yard
Cement	50-100*
Fly Ash or Granulated Blast Furnace Slag	0-600
Fine Sand	2,750 (adjust to yield one CY)
Water	500 (Maximum)

\*The percentage of cement may be increased above these limits only when early strength is required, and future removal is unlikely.

- D. Weights for fine aggregate and water shall be adjusted according to cementious content. The mix proportions shall be adjusted for removability, pumpability and flowability. If required, strength test data shall be provided prior to batching.
- E. If required by the Engineer of Record, the flowability can be measured by afflux time determined in accordance with ASTM C 939 and shall be 30 seconds  $\pm$  5 seconds as measured on mortar passing the No. 4 sieve. The equipment required to perform this test shall be provided by the Contractor.

## 2.03 APPROVED MIXES OF "EXCAVATABLE FLOWABLE FILL"

FDOT - Approved Design Mixes:

Plant	Mix Number
Tarmac	04-FF-65
Rinker Materials Corp.	04-FF-52
Central Concrete Supermix Inc.	06-FF-41
Cemex	06-FF-48



## PART 3 - EXECUTION

Flowable fill shall be produced and delivered using concrete construction equipment. Placing flowable fill shall be done by chute, pumping or other methods approved by the Engineer of Record.

### 3.01 CONSTRUCTION REQUIREMENTS

The flowable fill shall be placed to the designated fill line without vibration or other means of compaction. Placement shall be avoided during inclement weather, e.g. rain or ambient temperatures below 40 degrees F. The Contractor shall take all necessary precautions to prevent any damages caused by the hydraulic pressure of the fill during placement prior to hardening. Also, necessary means to confine the material within the designated space shall be provided by the Contractor.

### 3.02 ACCEPTANCE

- A. If required by the Engineer of Record, the flowability can be measured by afflux time determined in accordance with ASTM C 939 and shall be 30 seconds  $\pm$  5 seconds as measured on mortar passing the No. 4 sieve. The equipment required to perform this test shall be provided by the Contractor.
- B. The fill shall be left undisturbed until material obtains sufficient strength. Sufficient strength is 250 psi penetration resistance as measured using a handheld penetrometer. The penetrometer shall be provided by the Contractor.
- C. All flowable fill areas subject to traffic loads must have a durable riding surface.
- D. An approved type of accelerator may be approved for the placement of "Flowable Fill" in traffic areas when submitted to the City for F.D.O.T. approval.

END OF SECTION

## SECTION 03600

### GROUTING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Scope of Work: The scope of work involves the grouting of the space left void in the abandonment of the existing pipelines and structures. The work consists of furnishing all labor, equipment and materials and performing all work connected with the placement of the cementitious grout to fill the void.

##### 1.02 QUALITY ASSURANCE

- A. Grouting shall be performed by a crew under the direct supervision of a superintendent that has experience in grouting of this nature.
- B. Storage, mixing, handling, and placement shall be in accordance with manufacturer's instructions and specifications.
- C. Contractor is to provide all field tickets for grout mix deliveries for review by the City.

##### 1.03 SUBMITTALS

- A. Shop Drawings: Shop drawings shall be submitted in accordance with Section 01300. In addition, the following shall be submitted to the Engineer for acceptance prior to construction.
  - 1. A detailed description of equipment and operational procedures to accomplish the grouting operation, including grout mixture design, grout mixer type, grout samples, and test data.
  - 2. A detailed description of the grouting time schedule and a plan showing the location of grouting injection ports and vent ports to ensure that the pipe is fully grouted for each section, from end to end.
  - 3. Submittals for caps to be installed on each end of the piping.

#### PART 2 - PRODUCTS

##### 2.01 GROUT MATERIAL

- A. The grout shall be a "flowable fill" consisting of a mixture of Type 1 Portland Cement, Type "F" Flyash (ASTM 618), sand and water.

- B. The mixture shall contain a minimum of 50 pounds cement and minimum of 400 pounds flyash per cubic yard of grout.

## 2.02 EQUIPMENT

- A. All grout shall be mixed with a high shear, high energy colloidal type mixer to achieve the best uniform density.
- B. The grout shall be pumped with a non-pulsating centrifugal or tri-plex pump.
- C. The mixer shall be capable of continuous mixing. Batch mixing shall not be permitted.

## PART 3 - EXECUTION

### 3.01 GROUTING

- A. Grouting of the annular space due to the abandonment of the existing water pipe will be allowed in continuous individually bulkheaded segments of up to 500 linear feet for 6" diameter piping, 750 linear feet for 8" to 12" diameter piping, and 1000 linear feet for greater than 12" diameter piping. Note that these lengths are recommended standards, but each section and diameter of piping may vary from these maximum lengths on a case-by-case basis. The lengths of piping and locations of caps are to be included on the plan submitted by the Contractor as required in the Submittal section herein.
- B. Grout shall be placed in a maximum of three stages, with the initial stage volume equal to or greater than 50% of the total volume for that section of pipe being grouted. The maximum time wait between grouting stages shall be 24 hours.
- C. For each stage, mix and pump the material in one continuous process so as to avoid partial setting of some grout material during that stage, thus, eliminating voids and possible subsequent surface damage due to "cave-ins".
- D. Each section shall be grouted by injecting grout from the lowest point and allowing it to flow toward the highest point to displace water from the annulus and assure complete void-free coverage. Grout shall be placed through tubes installed in the bulkheads at the insertion pits or manholes. Grout tubes shall be at least 2-inch nominal diameter.
- E. One set of the 3 inch x 6 inch sample test cylinders shall be made for each grout mix preparation.
- F. After the ends of each section of pipe are exposed, the entire space, not to exceed 300 linear feet end to end, shall be sealed by controlled pumping of grout until it flows from the pipe at the opposite end of the grouting. **Grouting shall be carried out until the entire space is filled.**
- G. Grout pressure in the void space is not to exceed five (5) psi above maximum hydrostatic groundwater level. An open ended, highpoint tap or equivalent vent must be provided and monitored at the bulkhead opposite to the bulkhead through which grout is injected. This

bulkhead will be blocked closed as grout escapes to allow the pressuring of the annular space.

- H. The pump used for grouting shall be a continuous flow positive displacement model with a pugmill type mixing vat having a minimum shaft speed of 60 rpm and incorporated as an integral part of the equipment. Alternate equipment may be used subject to the approval of the Engineer. The rate of pumping shall not exceed 6 cubic feet per minute.

### 3.02 FIELD QUALITY CONTROL

- A. The quality of the grout, application of the equipment and installation techniques are the responsibility of the Contractor. The review and acceptance or approval of specific mix design, equipment or installation procedures shall in no way relieve the Contractor of his obligation to provide the final product as specified herein.

END OF SECTION



## **DIVISION 4 - 8**

**NOT USED**



# **DIVISION 9**

# **FINISHES**

## SECTION 09940

### PAINTING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Provide labor, materials, equipment and incidentals required for the surface preparation and application of shop primers and finish coats, as specified herein.

##### 1.02 RELATED WORK

- A. Factory prefinished items as specified.

##### 1.03 SUBMITTALS

- A. Submit the following in accordance with Section 01300:
  - 1. Manufacturer's specifications and data on the proposed primers and detailed surface preparation, application procedures and dry mil thicknesses, including list of items and surfaces to receive shop painting.

##### 1.04 DELIVERY, STORAGE AND HANDLING

- A. Provide in accordance with Section 01600 and as specified.
  - 1. Deliver materials to application area in original, unbroken containers, plainly marked with name and analysis of product, manufacturer's name, and shelf life date. Do not store or use contaminated, outdated, prematurely opened, or diluted materials.
  - 2. Store coated items to prevent damage or dirtying of coatings. Avoid need for special cleaning, and store coated items out of contact with ground or pavement. Place suitable blocking under coated items during storage.
  - 3. Do not expose surfaces to weather for more than six months before being top coated, or less time if recommended by coating manufacturer.
  - 4. Protect surfaces not to receive paint coatings during surface preparation, cleaning, and painting.

5. Protect coatings from damage during shipment and handling by padding, blocking, use canvas or nylon slings, and use care when handling.
6. At time of delivery of shop painted items to job site, ensure coatings are undamaged and in good condition.

#### 1.05 JOB CONDITIONS

##### A. Environmental Requirements:

1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied.
2. Do not apply coatings when dust is being generated.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

##### A. Shop coating shall be the following service type, as determined by conditions:

##### 1. Non-Potable Water:

- a. All ferrous metals not subject to potable water provide one coat with a dry film thickness of 2.5 to 3.0 mils with one of the following or equal:
  - (1) #1 Purple Prime made by Tnemec Co.
  - (2) Carbozinc 859 by Carboline Co.
  - (3) Multiprime EFD Epoxy Fast Day Inhibitive Primer 94-109 made by PPG Protective & Marine Coatings (4.0 – 6.0 DFT).

- ##### B. Shop prime with primers guaranteed by the manufacturer to be compatible with their corresponding primers and finish coats for use in the field and which are recommended for use together.

### PART 3 - EXECUTION

#### 3.01 APPLICATION

##### A. Surface Preparation and Priming:

1. Sandblast clean in accordance with SSPC-SP-6, Commercial Grade, immediately prior to priming non-submerged components scheduled for priming, as defined above.



2. Sandblast clean in accordance with SSPC-SP-10, Near White, immediately prior to priming submerged components scheduled for priming, as defined above.
  3. Before priming, provide surfaces dry and free of dust, oil, grease and other foreign material.
  4. Shop prime in accordance with approved manufacturer's printed recommendations.
- B. Non-primed Surfaces: Apply approved coating in accordance with manufacturer's printed recommendation.

### 3.02 TOUCH-UP

- A. Repair or replace damaged or defective coated areas. Resultant shop painting: Paint items as specified.
- B. Remove damaged or defective coatings by specified blast cleaning to meet surface cleaning requirements, just before recoating. When small areas of coating need touch up, surface preparation may be done with suitable power needle gun to match specified blast cleaning.

### 3.03 CONTRACT CLOSEOUT

- A. Provide in accordance with Section 01700.

END OF SECTION



**DIVISION 10 - 14**

**NOT USED**



# **DIVISION 15**

# **MECHANICAL**

## SECTION 15001

### WATER SERVICES AND MISCELLANEOUS FITTINGS

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. This Section consists of furnishing water, sewer, storm water piping complete with fittings, couplings, adapters, valves, and other appurtenances required during construction due to piping relocation or replacement.
- B. In accordance with the "Reduction of Lead in Drinking Water Act" (Act) enacted by the USEPA on January 4, 2011, effective January 4, 2014 all piping, fittings, fixtures, valves, and other appurtenances used in potable water supply and distribution systems shall be "lead free" as defined in Section 1417(d) of the Safe Drinking Water Act (SDWA). All requirements of the Act as it relates to products under this section shall be strictly adhered to.

##### 1.02 GENERAL INFORMATION AND DESCRIPTION

- A. The pipe and fittings shall be furnished by fully qualified manufacturers experienced in the fabrication, casting and manufacture of the pipe materials specified herein. The pipe and fittings shall be designed, fabricated and installed in accordance with the best practice of the trade and the standards specified herein.
- B. Pipe materials shall be the same as the existing pipe being replaced or relocated. Unless otherwise shown on drawings.
- C. No material furnished under this specification shall be shipped to the job site until all submittals have been reviewed.
- D. All new domestic services shall be Polyethylene tubing per City of Hollywood Standard Details.
- E. Contractor shall coordinate all work with City of Hollywood Public Utilities staff.

##### 1.03 RELATED WORK

- A. Section 02222 – Excavation and Backfill for Utilities and Structures
- B. Section 02515 – Water Services Connections and Transfers

##### 1.04 SUBMITALLS

- A. The Contractor shall submit Shop Drawings in accordance with the procedures and requirements set forth in Section 01300 - Submittals.

- B. Each submittal shall be complete in all aspects incorporating all information and data listed herein and all additional information required to evaluate the proposed piping material's compliance with the Contract Documents. Partial or incomplete submissions will be returned to the Contractor without review. Data to be submitted shall include, but is not limited to: catalog data consisting of specifications, illustrations and a parts schedule that identifies the materials to be used.
- C. The Contractor shall submit to the Engineer certified shop tests in accordance with the Section 01300 - Submittals.
- D. The Contractor shall submit to the Engineer certified letters of compliance in accordance with the Section 01300 - Submittals.

## PART 2 - PRODUCTS

### 2.01 FITINGS

- A. All fittings shall be marked with the manufacturer's name or trade mark, size, class or pressure rating, and the date of manufacture in accordance with the standards specified herein. All ductile iron fittings must be manufactured in the U.S.A. (no substitution).

### 2.02 POLY VINYL CHLORIDE (PVC) FOR USE IN POTABLE WATER SERVICES 2-INCH NOMINAL DIAMETER AND LESS (SCHEDULES 40 AND 80)

- A. Poly vinyl chloride (PVC) pipe and fittings specified herein are small diameter PVC with threaded, flanged and solvent cemented joints. All poly (vinyl chloride) (PVC) pipe and fittings shall be made from high impact, rigid poly (vinyl chloride) compounds. Pipe and fittings shall be marked indicating size, type and schedule, ASTM Designation, manufacturer or trade mark, and shall bear the NSF (National Sanitation Foundation) seal of approval. Wherever the abbreviation PVC is used in these Specifications in relation to pipe and fittings, it shall mean poly (vinyl chloride) plastic pipe and fittings as specified herein.
- B. PVC pipe shall be Schedule 80 as called for on the Plans or by the Engineer, Type I, Grade I, or Class 12454B with socket ends, and shall comply with ASTM Standard D1785, "Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80 and 120."
- C. Schedule 80 socket-type fittings shall comply with ASTM Standard D2467, "Socket-Type Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80" and D2464 "Specification for Threaded Poly Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80, for threaded fittings.
- D. Joining cement for PVC pipe and fittings shall comply with ASTM Standard D2564, "Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings". Cemented joints shall be made in accordance with ASTM Standard D2855, "Recommended Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings."

- E. Flanges: One piece molded hub type flat face flanges, 125 pound standard as specified under fittings hereinbefore.
- F. Gaskets: Full faced, 1/8-inch thick, neoprene (for sewer) or SBR (for water).
- G. AISI Type 316 stainless steel, ASTM A193, Grade B8M hex bolts and ASTM A194 Grade E8 hex head nuts. Bolts shall be fabricated in accordance with ANSI B 1812 and provided with washers of the same materials as the bolts. Bolts to be installed west of U.S. 1 shall be carbon steel.

2.03 HIGH DENSITY POLYETHYLENE (HDPE) FOR USE IN POTABLE WATER SERVICES 2-INCH NOMINAL DIAMETER AND LESS

- A. 2-inch high density polyethylene (HDPE) pipe used for services shall be IPS-O.D. Controlled with Standard Outside Dimension Ratio (DR) of 9, pressure rating of 200 psi, nominal outside diameter of 2.375-inches, minimum wall thickness of 0.264-inches, PE 3408, all in conformance with ASTM D3035-95 "Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter". Pipe shall be in conformance with ANSI/AWWA C901-96 "Polyethylene (PE) Pressure Pipe and Tubing, ½ In. (13 mm) Through 3 In. (76 mm), for Water Service" as modified herein. Pipe shall have a (natural) inner core with a blue colored outer shell. Pipe shall have footage marks at a maximum interval of every two feet.
- B. Polyethylene material shall have a minimum cell classification in accordance with ASTM D3350-00 "Polyethylene Plastics Pipe and Fitting Materials" of 345444D for the core, which shall be 100% virgin material, and 345444E for the outer shell. Note that both of these materials are UV stabilized as signified by the "D" for natural colored and "E" for the colored shell. Pipe shall be in conformance with NSF 61 or 14. Manufacturer shall supply certification of compliance with all of the above requirements. Certification shall ship with the pipe on material sold to the City and shall always be submitted with shop drawings and catalog cuts. When required by the Director of the Department of Public Utilities and/or the Engineer of Record, certification shall be signed and sealed by a professional engineer licensed to practice in the state in which the manufacturer is located or in the State of Florida.
- C. All mechanical fittings utilized with HDPE pipe and tubing services shall:
  - 1. Conform with ANSI/AWWA C800-01 "Underground Service Line Valves and Fittings" as modified herein
  - 2. Utilize AWWA Standard (Mueller) threads on tapped pipe and tapping saddles
  - 3. Be designed and manufactured to withstand a sustained working pressure of 150 psi and to restrain the pipe against pull-out under loading beyond the tensile yield of the HDPE pipe or tubing to which it is connected.
  - 4. Be supplied by the manufacturer with a certification of these capabilities and fittings shall not be accepted or installed without said certification. If fittings are

being supplied to the City, the certification shall ship with the fittings and payment will not be made without this certification. At the discretion of the Engineer, this certification may be required to be signed and sealed by a professional engineer licensed to practice in the state where the supplying firm is located, or in the State of Florida. His decision in this regard shall be final. In all cases, fittings shall be installed in strict accordance with the manufacturer's instructions.

#### 2.04 BACKFLOW PREVENTION DEVICES

- A. Backflow prevention devices shall be installed on all metered water services to non-residential properties, and on all residential services where the meter is larger than 5/8-inch in diameter. They shall be installed on private property between the meter and the building connection. The actual location of the assembly shall be coordinated with the Department of Public Utilities and the property owner.
- B. Backflow prevention devices for metered services between 1-inch and 3-inch diameter shall be Series LF007 Double Check Valve Assembly as manufactured by Watt Regulator Company, or City approved equal. For other diameters, Contractor to submit shop drawings for approval.

#### 2.05 BALL METER VALVES

- A.  $\frac{3}{4}$ ", 1", 1-1/2" and 2" (B43-342W, B43-444W, BF43-666W & BF43-777W) ball meter valves shall be manufactured by Ford Meter Company or City approved equal.

#### 2.06 CONTROL GATE VALVES

- A. Two inches and smaller in diameter shall be NIBCO T-113-LF. No substitutions.

#### 2.07 PACK JOINT COUPLINGS

- A.  $\frac{3}{4}$ ", 1", 1-1/2" and 2" Pack joint couplings for cooper or plastic tubing (C44-33, C44-44, C44-66 & C44-77) and for male iron pipe threads (C84-33, C84-44, C84-66 & C84-77) shall be manufactured by Ford Meter Company or City approved equal. No substitutions.

#### 2.08 INSERT STIFFENERS AND ACCESSORIES

- A. 1", 1-1/2" and 2" (INSERT-52, INSERT-74-DR11 & INSERT-75-DR11) insert stiffeners and accessories be manufactured by Ford Meter Company or City approved equal. No substitutions.

#### 2.09 BALL VALVE CURB STOPS

- A.  $\frac{3}{4}$ " (B11-333 & BL11-344-4.5) Curb stops shall meet AWWA C800, latest revision, and shall be ball valve curb stops with iron pipe threads shall be manufactured by Ford Meter Company or City approved equal. No substitutions.

#### 2.10 METER FLANGES

- A. 1-1/2" and 2" (CF31-66 & CF31-77) Outlet meter flanges shall be manufactured by Ford Meter Company or City approved equal. No substitutions.
- 2.11 STRAIGHT METER COUPLINGS
  - A. ¾" and 1" (C38-23-2.5 & C38-44-2.625) straight meter couplings shall be manufactured by Ford Meter Company or City approved equal. No substitutions.
- 2.12 "U" BRANCH PIECES
  - A. 1" and 1-1/2" (U48-43-spacing & U48-64-9-spacing) "U" branch pieces shall be manufactured by Ford Meter Company or City approved equal. No substitutions or City approved equal.
- 2.13 ANGLE "U" BRANCH PIECES
  - A. 1" (UA48-43-65) Angle "U" branch pieces shall be manufactured by Ford Meter Company. No substitutions.
- 2.14 LINESETTERS
  - A. ¾" and 1" (LSVB18-133W & LSVB21-444W) optional linesetters shall be manufactured by Ford Meter Company or City approved equal. No substitutions.
- 2.15 CALIBRATED PRESSURE RELIEF VALVES
  - A. Use ½" and ¾" WATTS 530C calibrated pressure relief valves or City approved equal or City approved equal or City approved equal.
- 2.16 CHECK VALVES
  - A. Refer to Section 15115, "Check Valves".
- 2.17 DOUBLE CHECK VALVE ASSEMBLIES
  - A. Refer to Section 2.04 above.
- 2.18 CORPORATION STOPS
  - A. Corporation stops for one (1) inch services shall have AWWA thread inlet and a compressive connection outlet suitable for service pipe. Corporation stops for two (2) inch services shall be ball valves and have outside iron thread inlet and a compression connection outlet suitable for service pipe. Corporation stops shall meet AWWA C800, latest revision.



B. Corporation Stop Manufacturers or Equal:

1. Mueller
2. Ford
3. Hays Manufacturing Company

2.19 FLEXIBLE COUPLINGS

- A. Flexible couplings shall be straight cast couplings and shall be Rockwell International No. 431, or equal.

2.20 UNION

- A. Copper to copper union.
- B. Union Manufacturers or equal:
1. Mueller H 15400
  2. Hays Manufacturing Company 5615

2.21 ANGLE VALVES

- A. Angle globe valves one (1) inch and two (2) inch diameter shall be Nibco or approved equal.

2.22 CASING PIPE

- A. Casing pipe shall be 3-inch minimum diameter (I.D.) Schedule 80 PVC or black iron, as determined by Engineer.

2.23 METER BOXES AND VAULTS FOR WATER SERVICE

- A. The Contractor shall furnish and install all meter boxes and vaults required for new and/or relocated water services. All concrete meter vaults shall be manufactured in accordance with the applicable provisions of ASTM C858, "Underground Precast Concrete Utility Structures", in accordance with the City's Standard Details and as specified herein. All materials used in the production of the concrete meter boxes and vaults shall be new and or recent manufacture. Aggregates shall not originate in salt or brackish water areas and no calcium chloride containing admixtures shall be used.

- B. Fine aggregate for concrete mixes shall consist of sand or stone screening, composed of hard durable grains, free of foreign matter such as loam, clay, dirt, organic matter or other impurities. Fine aggregate shall conform to the following gradation requirements:

<u>Size Sieve</u>	<u>Percent Passing</u>
3/8"	100
No. 4	90 to 100
No. 8	70 to 95
No. 16	50 to 85
No. 30	30 to 70
No. 50	10 to 45
No. 100	0 to 10

- C. Coarse aggregate for concrete mixes shall consist of gravel, broken stone or local limerock. Coarse aggregate shall be hard, durable and free of foreign matter such as loam, clay, dirt, organic matter or other impurities. It shall be free of adherent coatings. Coarse aggregate shall conform to the following gradation requirements:

Meter Boxes

<u>Size Sieve</u>	<u>Percent Passing</u>
3/4"	100
1/2"	90 to 100
3/8"	40 to 70
No. 4	0 to 85
No. 8	0 to 5

Meter Vaults

<u>Size Sieve</u>	<u>Percent Passing</u>
1-1/2"	100
1"	95 to 100
1/2"	25 to 60
No. 4	0 to 10
No. 8	0 to 6

- D. Cement shall be a standard brand of Portland cement meeting the requirements of ASTM C150-86, "Portland Cement", Type I. Different brands of cement, even if tested and approved, shall not be used.
- E. The forms shall be made from of a non-porous material with smooth surfaces and shall be accurate and strong enough to maintain the structure's dimensions within one half of the allowable tolerances given in Section 3.4 of ASTM C858. Forms shall be cleaned before each use, and shall be free of paint or other protective coatings that might cling to the surface of the concrete. Releasing agents applied to the form to aid in breaking

the bond shall not be injurious to the concrete. Steel reinforcing shall be securely positioned in the form to maintain the concrete cover shown on the Standard Details.

F. All reinforcing steel shall be free of rust, grease, dirt or mortar and shall be thoroughly cleaned of any such foreign matter or loose mill scale before being placed in position.

1. Wire reinforcement shall conform to ASTM A82, "Steel Wire, Plain, for Concrete Reinforcement."
2. Wire mesh reinforcement shall conform to ASTM A185, "Steel Welded Wire, Fabric, Plain for Concrete Reinforcement."
3. Bar reinforcement shall conform to ASTM A615-7a, "Deformed and Plain Billet-Steel Bars for Concrete Reinforcement", Grade 60, deformed, except that steel manufactured by the Bessemer process will not be accepted.

G. Concrete mix for meter vaults:

1. The aggregates shall be sized, graded, proportioned and thoroughly mixed in a batch mixer with proportions of cement and water that will produce a homogeneous concrete having a compressive strength of 3500 psi at 28 days of age for the boxes and plates and 3000 psi for the vaults after the same curing period.
2. Batched concrete shall be made in standard concrete mixers only, and not in mortar boxes, wheelbarrows or similar equipment.
3. Mixers shall be standard mechanical (power-driven) rotary type for concrete. Mixers normally used for mortar or plaster mixing will not be permitted.
4. Concrete shall be placed either by gravity into the form at a rate such that the concrete is plastic at all times and flows readily into all parts of the form and around all reinforcement steel without segregation of materials, or by high speed pneumatic rammer resulting in dense, evenly compacted concrete without disturbing the reinforcement. The surfaces from top to bottom shall show uniform compaction.
5. The top surface of the molded items shall be flat and finished smooth while in the mold. Capping will not be permitted. Where required by the City, corners shall be rounded.
6. Curing shall be by any method or combination of methods that will develop the required compressive strength within 28 days or less.

H. Water used in mixing concrete that is not in the form of surface moisture on the aggregate shall be from the City's water supply or other approved source.

I. The precast units may not be repaired without specific approval by the City.

- J. The quality of materials, manufacturing process, and the finished units shall be subject to inspection at any time by the City, and the supplier shall afford access for this purpose, if so required.
- K. Prior to installation of any of the above mentioned units, the Contractor shall furnish the Engineer, upon his request, a statement giving the following information:
1. Name of manufacturer.
  2. The source and type of cement.
  3. The source and specific gravities of the aggregates.
  4. The concrete mix proportions, and strength at 28 days.
  5. Name of admixtures, if any.
  6. Mill certificates for the reinforcement steel.
  7. Source of water.
- L. The precast units shall be subject to reject, either at the manufacturing plant or at delivery, upon failure to conform to any of the specified requirements herein. The following imperfections shall also be cause for rejection:
1. Defects that indicate any imperfect concrete mixing and molding.
  2. Surface defects such as honey-combed or open textured and damaged area which would affect the structural adequacy.
  3. Repaired areas or capping.
  4. Improper radius at corners or improper tolerances.
- M. Water meter boxes shall be concrete, as manufactured by BROOKS PRODUCTS or City-approved equal, in the following models:

Size/Type Meter	Model
5/8" and 3/4" single meter	36 MB Series
5/8" and 3/4" dual meter	11-2 MB Series
1" meter	37 MB Series
1-1/2" meter	38 MB Series
2" and 3" meters	66 MB Series

## 2.24 METER BOX COVERS

- A. Water meter covers shall be manufactured of recycled composite plastic, RHC Rubber and a UV stabilizer material. Covers shall be ROHS compliant (Restrictions pertaining to the use of certain Hazardous Substances) not to exceed the maximum allowed levels of the following substances: lead, Mercury, Cadmium, Hexavalent Chromium, PBB and PBDE.
- B. The Water Meter Covers shall be H-20 load rated, ADA compliant, non-metallic suited for radio read, and constructed with a non-skid black surface pattern. The Covers shall be sized to fit all meter boxes of the appropriate type (refer to Section 2.26 above) and be of the drop-in lid type.
- C. The covers for the meter boxes shall have the words "WATER METER", plus the manufacturer's name and country of origin permanently marked on the top surface of the lid or cover for ease of identification. The letter size may range from 3/8" to 3/4" with the larger size lids or covers having the larger size letters. The letters on the lids or covers shall be slightly raised.
- D. Covers shall have mating surfaces so that mating parts will not rattle or rock under traffic. The lifting eye in lids shall be ½" wide by 2 ½" long x 1" deep with the longest dimension parallel to the longest axis. Lifting pin shall be stainless steel ¼" in diameter.
- E. The Water Meter Covers shall have a recessed cavity and a through hole for the installation of the electronic radio transmitters (ERT). The recessed cavity on top of cover shall have an outside diameter of 4 1/16" While the through hole shall measure 1 ¾" inches in diameter. ERT unit shall sit flush on top of lid after installation to prevent tripping.

Type	Length	Width
MB36	15 3/8	10 1/8
MB37	18	11 ¼
MB38	23 ¼	13 ¾
MBDual	16 ½	14 ½

- F. The Covers shall come with a ten (10) year warranty and shall be replaced at no cost by the manufacturer if lid fails during the warranty period. All standard Water Meter Box Covers shall be similar to "Pentek Access Boxes" or approved equal. The above standards shall be certified by the manufacturer prior to installation. The City reserves the right to limit the weights of the items to be furnished for ease in handling. The thickness of covers shall be consistent throughout, so that when the covers are in place the top surfaces are level with the frame of the box.
- G. Contractor should be aware the City periodically checks materials supplied for conformance to these specifications, which shall include materials testing, dimensions and tolerances, component weights, markings, finish, fit and such other matters as are

necessary to assure supply of products meeting City requirements. Sample tests performed during shop drawing submittals will be at the Contractor's expense. If passed, it will be at the City's expense. Any re-testing due to materials not passing the tests shall be at the Contractor's expense.

- H. Contractor shall provide test-based certifications from the manufacturer that Water Meter Covers are not buoyant or near neutral buoyancy and that their specific gravity is 1.10 or greater. Documentation certifying the water meter box covers meets the specific buoyancy and gravity requirements must be submitted along with the six copies of shop drawings. The City shall conduct buoyancy testing procedures verifying that covers will meet the no floating and specific gravity requirements set forth in these Specifications. During the testing procedure Water Meter Covers shall sink immediately and remain submerged at the bottom of any testing reservoir filled with salt water. Samples of all water meter box covers stipulated in this bid shall be submitted upon written notification by the Department of Public Utilities. Samples will be sent for examination and testing by Department of Public Utilities and/or testing laboratory retained by the Department of Public Utilities.

#### 2.25 TAPPING SADDLES

- A. Double strap tapping saddles shall be constructed of 316 stainless steel, with neoprene gaskets cemented to the saddle body, and iron pipe threads designed to withstand a working pressure of five hundred (500) psi and accurately fit the pipe for which it is intended. The straps shall be forged steel with curvature accurately designed to fit pipe. All nuts and straps including threads shall be 316 stainless steel. Tapping saddles shall be Mueller K-10509, Clow F-1280, Smith Blair, or approved equal. Restraining Rods for mechanical joint fittings shall be A-316 stainless steel.

#### 2.26 DRESSER COUPLINGS

- A. Dresser couplings shall be regular black couplings with plain gaskets. They shall be Dresser Style 90 with no substitutions allowed. Polyethylene liner shall be used to fully encase the dresser couplings.

#### 2.27 MEGATAPE

- A. Megatape and locating metal wire to be buried 18 inches below finished grade over any PVC or HDPE water mains or sewage force mains (no exceptions).

#### 2.28 LINE STOP FITTING

- A. Valve cut-in on the existing water main shall be performed under pressure using line stop fittings. The body of the fittings shall be carbon steel conforming to ASTM A-36. The flange shall be steel flanges Class D, conforming to AWWA C207 with stainless steel bolts and nuts. Restraining Rods for mechanical joint fittings shall be A-316 stainless steel. The line stop fitting shall be manufactured by International Piping Services Company (1-407-843-2800), or approved equal.

## 2.29 FIRE HYDRANTS

- A. All fire hydrants shall be of the dry-barrel type and shall conform in design, material and workmanship to AWWA C502. Hydrants shall have five and one quarter inch main valve opening and a three way nozzle arrangement. The connection pipe shall be ductile iron pipe conforming to AWWA C151, Class 52.
- B. The depth of bury, measured from the bottom of the connecting pipe to the ground line of the hydrant shall be three feet six inches minimum. Exact depth at each location shall be determined by depth of line to which the hydrant is connected.
- C. Inlet connection shall be six-inch mechanical joint. Typical installation detail is shown in the Contract drawing.
- D. Two - 2-1/2 inch hose nozzles and one - 4-1/2 inch pump nozzle connection threads shall conform to NFPA No. 194 (ANSI B26) Standard for Screw Threads and Gaskets for Fire Hose Couplings.
- E. Hydrants shall be furnished with accessories to include mechanical joint follower rings with set screws and at least one adjustable hydrant wrench with spanner included with every ten hydrants supplied. Barrel extension sections shall not be allowed on new fire hydrants, except by special permission from the ENGINEER.
- F. There shall be no shrubbery planted within 6 feet of any fire hydrant.
- G. All fire hydrants shall be Mueller Super Centurion Model A-423 or American Darling Model B84B, with no substitutions allowed.

## 2.30 BACTERIOLOGICAL SAMPLE POINTS

- A. Bacteriological sampling points shall be provided in accordance to City's Sampling Point Detail W-16 where shown on Contract Drawings and adherence to the requirements of the permit.
- B. Sampling point shall not be removed until approval is obtained from Florida Department of Environmental Protection.

## 2.31 FITTINGS

- A. Refer to Section 15060 – Piping and Fittings.

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. Proper and suitable tools and appliances for the safe convenient handling and laying of pipe shall be used and, in general, conform to manufacturer's recommendations. At the time of laying, the pipe shall be examined carefully for defects, and should any pipe be

discovered to be defective after being laid, it shall be removed and replaced with sound pipe by the Contractor at his expense.

- B. Pipe and fittings shall, at all times, be handled with great care to avoid damage. In loading and unloading, they shall be lifted with cranes or hoists or slid or rolled on skidways in such manner as to avoid shock. Under no circumstances shall this material be dropped or allowed to roll or slide against obstructions. Pipe and other material shall be distributed along the right-of-way in advance of installation only to the extent approved by the Engineer. Such materials shall be so placed as to keep obstruction to traffic minimum.
- C. Upon satisfactory completion of the pipe bedding, 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 with no pressure being exerted on the pipe joints from the trench bottom.
- D. Pipe shall be installed in accordance with the manufacturer's recommendation. Before being lowered into the trench, the pipes and accessories shall be carefully examined and the interior of the pipes shall be thoroughly cleaned of all foreign matter by methods acceptable to the Engineer. 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. Any pipe which is disturbed or found defective shall be immediately removed and replaced with sound pipe.
- E. Lines shall be laid straight.
- F. Any work within the pipe and fittings shall be performed with care to prevent damage to the interior wall of the pipe. Damaged interior walls shall be repaired or the pipe section or fitting replaced as required by the Engineer. No cables, lifting arms, hooks or other devices shall be inserted into the pipe or fitting. All lifting, pulling or pushing mechanisms shall be applied to the exterior of the pipe or fitting.
- G. After pipe has been laid, reviewed and found satisfactory, sufficient backfill shall be placed along the pipe barrel to hold the pipe securely in place during the conduction of the required tests.

### 3.02 HYDRANT INSTALLATION

- A. All fire hydrants shall be installed in strict accordance with the manufacturer's published recommendations, AWWA Standards, and all applicable codes, and the applicable provisions of this Section. All installations shall be to the satisfaction of the local fire and building department.
- B. New fire hydrants and branch runs shall be installed by the Contractor where shown on the Plans and in accordance with the Standard Details herein. Installation of a new fire hydrant shall include excavation, installation of the branch run, installation of the hydrant on the branch run, the concrete anchor at the hydrant elbow, protective



concrete slab in non-sidewalk areas, replacing concrete sidewalk when in sidewalk area; steel posts filled with concrete, where required; plastic warning posts where required in FDOT right of way; backfilling and compaction. Fire hydrants shall be touched up or repainted with paint, as specified, where necessary, and the same type of paint shall be used to paint the guard posts after treating the galvanized surface with a neutralizer.

- C. All hydrants isolating valves with slip joints, friction type, or caulked joint connections shall be harnessed to the main pipe by means of welded steel harness sets, or clamps and steel rods, designed for this purpose. Dry barrel fire hydrants shall be set on a bed of pea gravel not less than 18 inches deep and 3 feet square, for drainage, or as required by local regulations and conditions.
- D. All 6-inch valve additions can be performed with partial-localized system isolation with the approval of the Engineer and proper notifications/coordination with the City (i.e. 48 hours minimum prior notice).
- E. Existing concrete thrust blocks shall be removed.
- F. Restrained joints shall be placed at all joints of fire hydrant and pipe connections.

### 3.03 INSTALLATION OF WATER SERVICES

High Density Polyethylene (HDPE) Pipe with Standard Outside Dimension Ratio (DR) of 9 shall be used for water services  $\leq 3$ ."

- A. Up to 2-inch diameter (galvanized steel is no longer used). Water services (single and dual) are going to be provided to connect proposed water meters and also to reconnect the existing water meters that remain in place. All HDPE services require the use of a 10 gauge stranded copper blue tracer wire.
- B. 2-Inch Services: Services from the new WMs shall consist of corporation stops, 2-inch HDPE tubing, curb stops and terminal fittings as shown in the City of Hollywood Standard Details. The services shall be installed where designated in the field by the Engineer, and will be determined as soon as possible in order that the Contractor may tap the mains as they are installed. All meter boxes shall be installed in non-traffic and non-parking areas.
- C. Where meter boxes are located in existing sidewalks, the whole flag of sidewalk shall be removed and replaced with new concrete. The concrete walk shall be 4 inches thick and finished with the proper tools and techniques to resemble the existing walk. The concrete support for meter boxes shall be eliminated when the box is installed in an existing sidewalk. Where meter boxes are located out of sidewalk areas, a concrete support is required. Concrete supports shall be to the established line and grade. Construct a 3'x3'x6"-thick concrete slab for non-sidewalk conditions. Meter boxes shall be set flush with the finished grade if inside walks, or with the top of the ground if out of sidewalk areas. All bends in copper tubing shall be made with an approved type tube bender to the satisfaction of the Engineer. Flattened, out of round or kinked tubing will

not be permitted. Each 1-inch service connection to be installed on this Project will be one of the following:

- D. Short Single - Consisting of a short run of 1-inch HDPE tubing from the main on the same side of the street as the proposed meter, to the meter installation approximately 2 1/2 feet from property line. Single meter box installation included.
- E. Long Single - Consisting of 2-inch diameter HDPE tubing connected to a main on the opposite side of the street from the proposed/existing meter, requiring additional HDPE tubing to cross the street to the meter installation, and requiring a 3-inch (min. I.D.) Schedule 80 PVC or black iron casing pipe, to be installed under the street pavement 1 & 18" past EOPON both sides. Single meter box installation included.
- F. Short Dual - Consists of a run of 2-inch HDPE tubing from the main on the same side of the street as the proposed meter, to the meter about 2 1/2 feet from property line. Includes installation of two (2) single meter boxes or double meter box with brass yoke, and all fittings needed to split the service line.
- G. Long Dual - Same as above but from a main on the opposite side of the street from the meter, requiring additional HDPE tubing to cross the street to the meter installation, and requiring a 3-inch (min. I.D.) Schedule 80 PVC or black iron casing pipe, to be installed under the street pavement & 18" past the edge of pavement on each side. Includes installation of two (2) single meter boxes or double meter box with brass yoke.

#### 3.04 INSTALLATION OF METER BOXES AND METERS

- A. Meters and meter boxes or vaults shall be installed by the Contractor as shown on the plans. Finish grade of completed meter enclosure shall be flush with existing ground or as shown otherwise. Meter boxes or vaults shall be set or constructed plumb with the top set to conform to the slope of the finish grade. Lightly compacted earth backfill shall be placed inside of the meter boxes to depth indicated. Grade adjustment of the meter boxes or vaults shall be by using standard extension sections for the box or vault specified. Install meter in a horizontal position with the meter dial or dials at a depth below the cover as shown on the plans. Backfill around meter vaults as specified for adjoining pipe.
- B. Water meters shall be reinstalled by the Contractor. Corporation stops shall be in the open position and angle stops shall be closed, prior to reinstallation of the meter.
- C. Withhold reinstalling meters until the new water system is ready for operation. The remainder of the service connection, excluding the meter, may be installed at any time during or after construction of the main.
- D. Where existing meters are designated for relocation, Contractor shall read, record, and submit existing meter readings on the form supplied by the City prior to removal of meters, and after completion of relocation work. Contractor shall furnish Engineer and City with copies of all meter readings on a monthly basis or as requested by the Engineer.

3.05 TESTING AND DISINFETION OF WATER MAIN LINES

A. Refer to Section 15995 - Pipeline Testing and Disinfection.

3.06 TESTING AND DISINFETION OF WATER SERVICE LINES

A. Refer to Section 02515 - Water Service Connections and Transfers.

END OF SECTION

## SECTION 15060

### PIPING AND FITTINGS

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. The work included in this section consists of furnishing all material, equipment, and labor, and performing all operations necessary for the complete installation of all piping, fittings and accessories within the limits of work, as shown on the drawings and specified herein.
- B. Where references are made to other standards or codes unless specific date references are indicated the latest edition of said standard or code shall govern.

##### 1.02 WORK NOT INCLUDED UNDER THIS SECTION

- A. Piping installation for various types of piping systems is specified within various other sections herein. Installations specified in this section are supplementary to those sections and in the case of conflict the more stringent condition shall prevail.

##### 1.03 RELATED SECTIONS

- A. Section 01300 - Submittals
- B. Section 15001 – Water Services and Miscellaneous Fittings
- C. Section 15995 - Pipeline Testing and Disinfection
- D. All sections specifying various types of valves.

##### 1.04 PIPING LAYOUT

- A. Field-verify dimensions prior to preparation of layout and shop drawings. Obtain shop drawing approval prior to fabrication of piping. All items not specifically mentioned in the Specifications or noted on the approved Plans, but which are obviously necessary to make a complete working installation shall be included.

##### 1.05 DELIVERY, STORAGE AND HANDLING

- A. During shipping, delivery and installation of pipe and accessories, handle in a manner as to ensure a sound undamaged condition.
- B. Exercise particular care not to injure pipe coatings.

## PART 2 - PRODUCTS

### 2.01 PIPE AND FITTINGS: DUCTILE IRON

#### A. GENERAL

1. In accordance with the "Reduction of Lead in Drinking Water Act" (Act) enacted by the USEPA on January 4, 2011, effective January 4, 2014 all piping, fittings, fixtures, valves, and other appurtenances used in potable water supply and distribution systems shall be "lead free" as defined in Section 1417(d) of the Safe Drinking Water Act (SDWA). All requirements of the Act as it relates to the products under this section shall be strictly adhered to.
2. As used herein, "ANSI" denotes the American National Standards Institute, "AWWA" denotes the American Water Works Association, and "ASTM" denotes the American Society for Testing and Materials.
3. All pipe and fittings to be furnished hereunder shall be manufactured in the United States and shall conform to the referenced ANSI and/or AWWA Standard as modified herein, as appearing in the following sections.
4. All markings required on pipe and fittings, shall be clearly legible and located such that they will not be hidden or destroyed when assembled into the intended system.

#### B. PIPE

1. All pipe shall be ductile iron pipe conforming to ANSI/AWWA Standard C151/A21.51, "Ductile-Iron Pipe, Centrifugally Cast, for Water". All pipe and fittings for water applications shall be in full compliance with ANSI/NSF 61, "Drinking Water System Components-Health Effects". Manufacturers shall maintain their NSF certification for the duration of the Contract and any extensions thereof.
2. Wall Thickness:
  - (a) Buried push-on, mechanical, and restrained joint pipe shall have a wall thickness class in accordance with ANSI A21 .51 equal to or greater than classes indicated below

#### Buried Pipe Size Class

4" - 12"	52
14" - 54"	52
60" - 64"	Pressure Class 150

3. All flanged, grooved pipe shall have a wall thickness class in accordance ANSI A21.15 (AWWA C115) and be rated at 250 psi working pressure. The nominal thickness of pipe 6-inch and larger shall not be less than those shown in Table 15.1 of ANSI C115. The nominal thickness of 4-inch pipe shall be ANSI C151 Class 54.
4. For restrained joint pipe, the thickness of the pipe barrel remaining after grooves are cut, if required in the design of restrained end joints, shall not be less than the nominal wall thickness of equal sized non-restrained joint pipe as shown above.
5. Each piece of pipe shall be marked as required in Subsection 4.7 of AWWA C151-02. Letters and numerals on pipe sizes 12-inch and smaller shall be not less than 3/8-inch.
6. The Department of Public Utilities absolutely reserves the right to require the use of higher thickness or pressure class pipe in applications where in the opinion of the Engineer (i.e., the Director of the Department of Public Utilities or his representative) such use is in the best interest of the City. The Engineer's decision in this regard shall be final.
7. A sufficient quantity of non-toxic vegetable soap lubricant shall be supplied with each shipment of pipe. The soap lubricant shall be suitable for use in subaqueous trench conditions.
8. For flanged ductile-iron pipe with integrally cast flanges or threaded flanges, the nominal wall thickness of the pipe barrel shall be as specified in Section D, "Joints and Accessories", under "Flanged Joints", herein below.
9. The single gasket push-on pipe shall be shipped in standard 18-foot or 20-foot lengths, but not both. The restrained single-gasket push-on joint pipe shall be shipped in standard 18 or 20-foot lengths as specified above or fabricated lengths as noted in each order. At least two lengths of each size of single gasket push-on pipe furnished under each order shall be tested with circumferential gauges to insure that the pipe may be cut at any point along its length and have an outside diameter which will be within the manufacturer's standard design dimensions and tolerances for plain pipe. These lengths shall be identified with an easily distinguished, painted marking, longitudinally along the full length of the pipe.

C. FITTINGS

1. Fittings Conforming with ANSI/AWWA C110/A21.10-12 (Water & Sewer Use) - Restrained push-on joint fittings shall be cast ductile iron for use with ductile-iron pipe as specified above. Standard mechanical joint, push-on joint and flanged joint fittings shall also be ductile iron for use with ductile iron pipe as specified above. Cast ductile iron fittings in the 3-inch through 24-inch size range shall be

pressure rated at 350 psi, minimum; (except flange-joint fittings shall be rated at 250 psi, minimum); and in the 30-inch through 48-inch size range shall be pressure rated at 250 psi, minimum. All fittings with mechanical joints, flange joints and push-on joints shall conform to ANSI/AWWA Standard C110/A21.10-98, "Ductile Iron and Gray Iron Fittings, 3-inch Through 48-inch, for Water and Other Liquids". In addition, fittings with mechanical joints and push-on joints shall conform to ANSI/AWWA Standard C111/A21.11-00, "Rubber-Gasket Joints for Ductile Iron Pipe and Fittings".

2. The weight of fittings shall be as given in ANSI/AWWA C110/A21.11-98 for ductile-iron fittings. The weight of mechanical joint fittings shall be as established in Tables 3 through 12. The weight of flanged joint fittings shall as establish in Tables 13 through 20.
3. Fittings Conforming with ANSI/AWWA C153/A21.53-00 (Water & Sewer Use) - All fittings shall be cast ductile-iron for use with ductile-iron pipe as specified above. Fittings in the 3-inch through 24-inch size range shall be pressure rated at 350 psi minimum; 30-inch through 48-inch size range shall be pressure rated at 250 psi minimum; and in the 54-inch through 64-inch size range shall be pressure rated at 150 psi minimum (except for those fittings such as plugs, caps and sleeves which are normally rated at a higher pressure). No flanged fittings or mixtures of flanged with other end type fittings will be allowed in the range of 3-inch through 48-inch since they are not covered in the AWWA Standard. Flanged fittings conforming with and covered by this standard are allowed in sizes 54, 60 and 64-inch. In conformance with the standard, 54, 60 and 64-inch flanged tees, crosses and reducers with outlets of smaller dimension as listed in ANSI/AWWA C153/A21.53-00 are permitted. All fittings with mechanical joints, flange joints and push-on joints shall conform to ANSI/AWWA Standard C153/A21.53-00, "Ductile-Iron Compact Fittings for Water Service". In addition, fittings with mechanical joints and push-on joints shall conform to ANSI/AWWA Standard C111/A21.11-00, "Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings" except as otherwise allowed in C153. Mechanical joint glands shall be ductile iron only.
4. Since the C153 Standard provides only minimum dimensions, fully detailed drawings of all fittings proposed shall be supplied by the manufacturer with his bid. The tabulated nominal weight of each size and type of fitting shall also be supplied by the manufacturer for all items proposed. This weight shall be that of the bare casting prior to application of any lining or coating. The weight of a fitting supplied under the contract shall not be less than ninety-five (95) percent of the tabulated nominal weight supplied by the manufacturer's catalog literature for that fitting. Further, the weight of fittings supplied shall not be more than five (5) percent above the same tabulated nominal weight.

D. JOINTS AND ACCESSORIES

1. Push-On Type Joints (Single Gasket and Single Gasket with Gasket Restraint) - Push-on joints shall conform to ANSI/AWWA Standard C111/A21.11-12, except that the gaskets for pipe and fittings shall be neoprene where so specified.
2. The required number of gaskets for each push-on joint pipe plus one extra for every 50 joints or fraction thereof, shall be furnished with each order. The gaskets shall be shipped in suitable protective containers. All single-gasket pipe shall be as manufactured by United States Pipe and Foundry Company (Tyton), by the American Cast Iron Pipe Company (Fastite), by McWane, Inc. (Mix of Tyton and Fastite), Tyler/Union (Tyton) or approved equal.
3. Push-on joints together with both their regular and gasket-restraint gaskets shall be of the design, dimensions and tolerances of either those provided by American Cast Iron Pipe Company (Fastite/Fast-Grip) or those provided by United States Pipe and Foundry Company (Tyton/Field Lok). No other designs shall be acceptable. If required by the City of Hollywood Department of Public Utilities, the Vendor shall supply complete design drawings with dimensions, tolerances and materials of the joint and gasket being supplied within fourteen (14) calendar days of the date of receipt of the letter, fax or E-mail requiring said submission. If so, required by the Department of Public Utilities, this submission shall be signed, sealed and dated by an Engineer registered to practice in the State where the manufacturer is located.
4. Mechanical Joints - Mechanical joints for fittings shall conform to ANSI/AWWA Standard C111/A21.11-12, except that the gaskets for each fitting under Groups D and D1 shall be neoprene. Bolt holes for mechanical joints shall be equally spaced and shall straddle the vertical centerline. Tee head bolts and hexagonal nuts for all mechanical joints in fittings shall be A-316 stainless steel with dimensions and threading as specified in ANSI/AWWA Standard C111/A21.11-00. Glands shall be of ductile-iron construction for ductile iron fittings and cast gray iron or ductile iron for cast gray-iron fittings. Restraining rods for all mechanical joint fittings shall be A-316 stainless steel.
5. The proper number of gaskets, glands, bolts and nuts, all conforming to ANSI/AWWA Standard C111/A21.11-00, plus one extra gasket for every 10 joints or fraction thereof, shall be furnished with each order. The gaskets and joint accessories shall be shipped in suitable protective containers. Follower glands held in place with set screws will not be acceptable. Segmented glands will not be acceptable.
6. Mechanical Joint and Push-on Joint "Megalug®"-type Restraining Systems



7. Use of this type of restraint is restricted to underground mechanical joint or push-on joint applications, and in general may not be used above grade or as a substitute for flanged joints. Any above grade applications will require submission of shop drawings of the piping system where they are utilized and may require design by a Florida registered Professional Engineer.
8. This type of restraint may be utilized as dictated by design and/or field conditions in any mechanical joint or push-on joint underground piping system of 30-inch nominal diameter and smaller. The prior written permission of the Engineer is required for diameters of 36, 42 and 48-inch. In instances where written permission cannot be immediately obtained, verbal permission will be allowed but is to be confirmed in writing on the first business day following the substitution. If this type of restraint is used without permission or if permission is denied, the Contractor making the substitution shall be solely responsible for all costs, both direct and indirect, of immediately correcting the restraint system to the satisfaction of the Engineer.
9. It is recognized that flange adapters of this type form a useful tool for adjusting lengths of flanged pipe runs in instances such as runs with a large number of deflections where it is almost impossible to predict all lengths correctly. Therefore, a very restricted number of these joints will be allowed in instances where it can be clearly shown to the satisfaction of the Engineer that they are necessary. This application is restricted to 20-inch nominal diameter and below. Further, this use shall be designed in and shall not be made as a field substitution. In all instances flange adapters shall be rated for a minimum working pressure of 250 psi with a minimum safety factor of 2:1. In no case will these flange adapters be used as a general substitute for standard flanged joints.
10. The Department of Public Utilities absolutely reserves the right to require other forms of restraint and/or thrust anchoring where, in the opinion of the Engineer, the use of this form of restraint is not in the best interest of the City. In this regard, the Engineer's decision shall be final.
11. The "Megalug®" joint-restraint systems manufactured by EBAA Iron, Inc., of Eastland Texas, will be considered the standard of quality for the purpose of evaluating substitute systems.
12. Each thrust-resistant mechanical joint or push on joint made up with this type of restraint and the pipe and fitting of which it is a part, shall be designed to withstand an axial thrust from an internal pipeline pressure of at least 150 psi at bulkhead conditions without reduction because of its position in the pipeline nor for support from external thrust blocks.
13. This type of joint restraint shall not be used above grade except as previously specified nor shall it be used as a carrier pipe within a casing. This type of restraint

shall not be used with tape wrapped pipe or with too great a coating thickness on the exterior of the pipe.

14. All bolts, nuts and washers for fittings shall be A-316 stainless steel. Restraining rods shall be A-316 stainless steel for mechanical joint fittings.
15. Restrained Push-on Joints (Single Gasket Non-Gasket Restrained) - Restrained joints in pipe and fittings shall be of the single gasket push-on type, and shall conform to all applicable provisions of ANSI/AWWA Standard C111/A21.11-12, except that gaskets for pipe and fittings shall be neoprene, where so specified, and the following requirements:
  - (a) Thickness of the pipe barrel remaining at grooves cut, if required in the design of restrained end joints, shall not be less than the nominal wall thickness of equal sized non-restrained pipe as specified in Section B above.
  - (b) Restrained joints using field welding, set screws, or gaskets with expanding metal inserts will not be acceptable.
  - (c) The restraining components, when not cast integrally with the pipe and fittings, shall be ductile iron or a high strength non-corrosive alloy steel.
  - (d) Tee head bolts and hexagonal nuts for all restrained joints in pipe and fittings shall be A-316 stainless steel with dimensions and threading as specified in ANSI/AWWA Standard C111/A21.11-12, except that the length of the bolts shall meet the requirements for the restrained joint design. Restraining rods for mechanical joint fittings shall be A-316 stainless steel.
  - (e) The proper number of gaskets, bolts, nuts and all necessary joint material, plus one extra gasket for every 10 joints or fraction thereof, shall be furnished with each order. The gaskets and joint accessories shall be shipped in suitable protection containers.
  - (f) Each thrust-resistant joint, and the pipe and fitting of which it is a part, shall be designed to withstand the axial thrust from an internal pipeline pressure of at least 150 psi at bulkhead conditions regardless of its position in the pipeline and regardless of it being supported by external thrust blocks.
  - (g) Restrained push-on joint pipe and fittings shall be capable of being deflected after assembly. During deflection, all components in the restrained system shall be in contact to provide an equal force on all contact areas.

- (h) When restrained spigot ends are ordered for items of Group A, the corresponding bell ends of the pipe to be restrained (also within Group A), shall be furnished with the required matching restraining features at no additional cost other than the price bid per foot of pipe.
- 16. Flanged Joints - Connecting pieces with one end flanged and the other end either plain-end or mechanical joint, shall conform to ANSI/AWWA Standard C110/A21.10-12. Joint material for both the flanged end and the mechanical joint accessories for connecting pieces with a mechanical joint end shall be furnished as specified.
- 17. Flange adapters shall be used only on a restricted basis and shall not be used as a general substitute for regular flanged joints. Further, the Department of Public Utilities absolutely reserves the right to require regular flanged or other types of joints when it is considered in the City's best interest. The decision of the Engineer shall be final in such situation.
- 18. Flanges shall be made of ductile iron conforming to ASTM 536. Flange shall be restrained by a number of individual gripping wedges operated by torque-limiting actuating screws. Each flange adapter shall have a permanently cast in identification number allowing tracing of the date, foundry and pour that fabricated the unit together with all test data for the material of the pour. Records for this purpose shall be retained by the foundry for a minimum of two years after the pour date and shall be supplied to the City within no more than two weeks after request. Factor of safety shall be a minimum of 2 to 1.
- 19. Other types of flanged fittings and flanged-joint pipe shall conform to the following requirements unless otherwise stated in the order:
  - (a) Flanged fittings shall conform to ANSI/AWWA Standard C110/A21.10-12, as specified hereinabove.
  - (b) Flanged ductile-iron pipe with integrally cast flanges shall be manufactured in accordance with ANSI/AWWA Standard C151/A21.51-09, and with provisions contained hereinabove for centrifugally cast ductile iron pipe, and shall be furnished with ANSI Standard Class 125 flanges, plain-faced and drilled, conforming to ANSI Standard B16.1, "Cast Iron Pipe Flanges and Flanged Fittings", latest revision. Hollow back flanges are not acceptable.
  - (c) Flanged ductile-iron pipe with threaded flanges shall be manufactured in accordance with ANSI/AWWA Standard C115/A21.15-11, "Flanged Ductile-Iron Pipe With Ductile-Iron or Gray-Iron Threaded Flanges", and shall be rated for a working pressure of 250 psi, minimum. The nominal thickness of flanged ductile-iron pipe 6-inch diameter and larger shall not be less than those shown in Table 1 of ANSI/AWWA Standard C115/A21.15-11. The nominal thickness of 4-inch diameter flanged

ductile-iron pipe shall be Class 54 (min.) conforming to Tables 3 and 4 of ANSI/AWWA Standard C151/A21.51-02. The pipe shall be furnished with ANSI Standard Class 125 flanges, plain faced, and drilled, conforming to ANSI Standard B16.1, latest revision. Hollow back flanges and grey-iron flanges shall not be acceptable for use as threaded flanges. Threaded flanges shall be individually fitted, and machine tightened on the threaded pipe by the manufacturer and shall not be interchangeable in the field. Pipe lengths shall be as ordered. Removal of flanges, cutting and re-threading the pipe, and re-installing the flanges will not be permitted in any case.

- (d) All flanges on ductile-iron pipe and fittings shall be of ductile iron. All joint materials for flanged pipe and fittings shall be supplied with all pipe or fittings ordered. Bolts and nuts shall comply with all requirements of Appendix Section A.1 of ANSI/AWWA Standard C115/A21.15-99, except that all shall be A-316 stainless steel. Unless ring gaskets are specifically called for in the order, gaskets shall be full-faced and 1/8-inch thick. Gaskets shall fully conform to the requirements of ANSI/AWWA Standard C115/A21.15-99, Appendix Section A.2, except that gaskets shall be SBR for water and neoprene for sewer usages.

#### E. LININGS AND COATINGS

##### 1. Asphaltic Coating

- a. All ductile iron pipe and fittings shall be outside coated with an asphaltic material applied by means of the airless spray method. The exterior coating shall meet AWWA Specifications for this type of coating, shall be smooth without pinholes, thin, bare or overly thick areas. Smoothness shall be such that when hand rubbed, no "sand paper" feeling will be experienced and such that the spigot area will readily slide through the gasket without pulling, tearing, rolling or otherwise disturbing the sealing capabilities of the gasket. Spigot ends shall be beveled prior to painting and to an extent that will permit ready insertion of the spigot through the gasket area.

##### 2. Cement-Mortar Lining

- a. Ductile iron pipe and fittings where so specified shall be cement-lined and seal-coated in accordance with ANSI/AWWA Standard C104/A21.4-13, "Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water".

##### 3. Ceramic Epoxy Lining and Polyethylene Lining

- a. Pipe and fittings where so specified shall be lined with either ceramic epoxy or virgin polyethylene. A Vendor may supply one or the other material but not both in the same order.

- b. All sewer pipe and fittings of 4-inch nominal diameter and above, except for riser pipe for valves, shall be lined with either ceramic epoxy lining or virgin polyethylene. Polyethylene shall be compounded with carbon black to resist exposure to ultraviolet rays during open-air storage and shall comply with ASTM Standard ASTM D4976-12a, "Polyethylene Plastics Molding and Extrusion Materials". Ceramic epoxy shall contain pigmentation to resist ultraviolet exposure under the same conditions.

4. Ceramic Epoxy Lining

- a. All ductile iron pipe and fittings shall be delivered to the application facility without asphalt, cement lining or other lining on the interior surface or the first 6 inches on the spigot end of the pipe exterior.
- b. The only ceramic epoxy material approved by the Department of Public Utilities at this time is Protecto 401™ Ceramic Epoxy, manufactured by Induron Coatings, Inc., of Birmingham, Alabama. Any request for substitution must be accompanied by:
  - (1) A successful history of lining pipe and fittings for sewer service.
  - (2) A statement from the manufacturer concerning recoatability and repair to the lining.
- c. A test report verifying the following properties and a certification of the test results:
  - (1) Permeability rating of 0.00 when tested according to Method A of ASTM E96-66, "Test Method for Water Vapor Transmission of Materials", Procedure A with a test duration of 30 days.
  - (2) The material shall be an amine cured novolac epoxy containing at least 20% by volume of ceramic quartz pigment.
  - (3) An abrasion resistance of no more than 3 mils (.075 mm) loss after one million cycles using European Standard EN 598 (1994), Section 7.8, "Abrasion Resistance".
  - (4) The following tests must be performed on coupons from factory-lined ductile iron pipe:
    - i) ASTM B-117 Salt Spray (scribed panel) - Results to equal no more than 0.0 undercutting after two years.

- ii) ASTM G95 Cathodic Disbondment 1.5 volts @ 77°F - Results to equal no more than 0.5mm undercutting after 30 days.
  - iii) Immersion testing rated using ASTM D714-87
    - a) 20% Sulfuric Acid - No effect after two years.
    - b) 140°F 25% Sodium Hydroxide - No effect after two years.
    - c) 160°F Distilled Water - No effect after two years.
    - d) 120°F Tap Water (scribed panel) - 0.0 undercutting after two years with no effect.
  - iv) ASTM G-22 90 - Standard practice for determining resistance of synthetic polymeric materials to bacteria. The test should determine the resistance to growth of Acidithiobacillus Bacteria and should be conducted at 30°C for a period of seven days on a minimum of 4 panels. The growth must be limited only to trace amounts of bacteria.
5. Application - Ceramic epoxy lining shall be applied by a competent firm with a successful history of applying linings to the interior of ductile iron pipe and fittings, following the following procedures:
- (a) Surface Preparation - Prior to abrasive blasting, the entire area which will receive the protective compound shall be inspected for oil, grease, etc. Any areas where oil, grease or any substance which can be removed by solvent is present shall be solvent cleaned using the guidelines outlined in SSPC-1 Solvent Cleaning. After the surface has been made free of grease, oil or other substances, all areas to receive the protective compounds shall be abrasive blasted using compressed air nozzles with sand or grit abrasive media. The entire surface to be lined shall be struck with the blast media so that all rust, loose oxides, etc., are removed from the surface. Only slight stains and tightly adhering annealing oxide may be left on the surface. Any area where rust reappears before coating must be re-blasted to remove all rust.
  - (b) Lining - After the surface preparation and within 8 hours of surface preparation, the interior of pipe and fittings shall receive a minimum forty (40) mils dry film thickness of the protective lining. No lining shall take place when the substrate or ambient temperature is below 40°F. The surface also must be dry and dust free. If flange ends are included in the Project, the linings must not be used on the face of the flange; however,

full face gaskets must be used to protect the ends of the pipe. The 40-mil system shall not be applied in the gasket grooves.

- (c) Coating of Gasket and Spigot Ends - Due to the tolerances involved, the gasket area and exterior of the spigot end up to 6 inches back from the end of the spigot must be coated with Protecto Joint Compound of six 6-mil minimum, 10-mil maximum. This coating shall be applied by brush to ensure coverage. Care should be taken that the coating is smooth without excess buildup in the gasket groove or on the spigot end. All material for the gasket groove and spigot end shall be applied after the application of the lining as specified in the preceding paragraph.
- (d) Number of Coats - The number of coats of lining material applied shall be as recommended by the lining manufacturer. However, in no case shall this material be applied above the dry thickness per coat recommended by the lining manufacturer in printed literature. The time between coats shall never exceed that time recommended by the lining material manufacturer. No material shall be used for lining which is not indefinitely recoatable with itself without roughening the surface.
- (e) Touch-Up and Repair - Protecto Joint Compound shall be used for touch-up or repair. Procedures shall be in accordance with manufacturer's recommendations.

6. Sealing Cut Ends and Repairing Field Damaged Areas:

- (a) Remove burrs caused by field cutting of ends or handling damage and smooth out the edge of the lining if rough.
- (b) Remove all traces of oil, grease, asphalt, dust, dirt, etc.
- (c) Areas of loose or damaged lining associated with field cutting the pipe shall be repaired, if approved by the Engineer, as recommended by the pipe manufacturer. The damaged area shall be stripped back by chiseling or scraping about 1 to 2 inches into the well-adhered lining before patching.
- (d) The exposed metal and the 1 to 2-inch lining overlap shall be roughened with a coarse grade of emery cloth (#40 grit), rasp or small chisel. Avoid wire brushing or similar buffing since these tend to make the surface too smooth for good adhesion.
- (e) With the area to be sealed or repaired absolutely, clean and suitably roughened, apply a coat of Protecto Joint Compound by brush in accordance with the manufacturer's recommendations.

7. Inspection and Certification

- a. Inspection:
- b. All ductile iron pipe and fitting linings shall be checked for thickness using a magnetic film thickness gauge. The thickness testing shall be done using the method outlined in SSPC- PC-2 Film Thickness Rating.
- c. The interior lining of all pipe and fittings shall be tested for pinholes with a nondestructive 2,500-volt test.
- d. Each pipe joint and fitting shall be marked with the date of application of the lining system and with its numerical sequence of application on the date.

8. Certification

- a. The pipe or fitting manufacturer must supply a certificate attesting to the fact that the applicator met the requirements of this specification, and that the material used was as specified, and that the material was applied as required by the specification.

9. Polyethylene Lining

- a. The polyethylene shall be fused to the pipe and fittings with heat to form a tightly bonded uniform lining 40 mils thick, minimum, extending from the spigot end to the gasket seat in the bell of push-on, restrained push-on and mechanical type joints.
- b. Prior to preheating the pipe, 75% or more of the high-temperature oxide film shall be removed through proper preparation of pipe interior surface. Fittings shall be sand blasted. Pipe and fittings shall be uniformly preheated to a temperature adequate to provide uniform fusing of the polyethylene powders and proper bonding to the interior of the pipe and fittings.
- c. The lining at the ends (spigot and bell) shall be hermetically sealed with a coal-tar epoxy. This epoxy shall coat the inside of the bell of both pipe and fitting as well as the last six inches on the inside of the spigot end of the pipe and two to three inches on the outside of the spigot end.
- d. The lining of all pipe and fittings shall be subjected to and pass a test for pinholes, bare spots, metal particles, insufficient lining thickness and other defects by a method conforming to ASTM Standard G62-87 (1998), "Holiday Detection in Pipeline Coatings", Method B (high voltage). Other test methods may be submitted to the City for approval, but no approval



will be granted unless it is clearly shown to the satisfaction of the City that the method is equivalent to the specified tests insofar as detecting defects and insufficient lining thickness.

5. The manufacturer shall provide certifications on the "Holiday" test as well as certifications on a uniform (spigot end to gasket seat in bell) minimum 40-mil-thick lining.

F. QUALITY ASSURANCE

1. All piping, fittings and other materials supplied under this contract shall be subject to inspection while still on the delivery truck. It is the sole responsibility of the vendor and supplier to make prior contact with the Department of Public Utilities and provide a minimum of 48-hours prior notice of delivery. When so notified, the City will make arrangements for inspection of the material upon arrival or within a reasonable time thereafter. Material will not be unloaded without inspection taking place either prior to, or if necessary, for examination, during the unloading procedure. The City will not be responsible for any delays or additional costs created by non-compliance with the requirement for prior notification or the requirement for thorough inspection.
2. Materials shall be delivered in complete compliance with the AWWA Standards as modified herein, without damage, and shall match or exceed the quality of any samples supplied. The City absolutely reserves the right to require samples of any material supplied and to perform whatever tests considered by the Engineer, whose decision shall be final, to be in the City's best interest on said samples. Where such tests are of a destructive nature, the sample, if it passes the test will be paid for (at cost as shown by invoice) by the City. Samples failing will be immediately replaced with suitable material at the supplier's/contractor's expense. Samples required prior to order as a condition for purchase or as a materials submittal for approval will be at the supplier's/contractor's expense but, if approved and not used for destructive tests, may be used in the work with permission from the Engineer.
3. Materials found to be defective, not in strict compliance with the quality standards of samples supplied or these specifications shall be immediately returned to the vendor at his expense. If defects are discovered at a later time, the vendor shall be required to remove said items and shall bare all costs for so doing together with any replacement costs. Rejection of items may subject the vendor to liquidated and/or actual damages as specified elsewhere herein.
4. Foundries supplying materials shall maintain their metallurgical records for a minimum period of two years after fabrication and firms not doing so may be found in default.

5. Flaws which provide cause for rejection include but are not limited to:
- a. Incorrect metallurgy or metallurgy which cannot be verified to the complete satisfaction of the Engineer
  - b. Foundry identification/location, size, pressure and material identification information lost, removed, non-existent, or not visible when assembled
  - c. Not in complete compliance with all applicable AWWA and NSF standards and requirements as modified herein and/or these specifications
  - d. Not in complete compliance with approved shop drawings
  - e. Incorrect, rough, chipped, cracked, scratched, flawed or otherwise damaged interior or exterior coatings or linings
  - f. interior or exterior coatings which are too thin, or too thick to allow proper assembly, or too thick to allow proper grip by restraining gaskets or other restraining elements
  - g. Pin holes or honey combing of pipe
  - h. Weld spatter or excess metal in gasket grooves or the whole of the bell area
  - i. Bell areas which are distorted or otherwise improperly cast
  - j. Spigots which are out of round, not of proper dimension, or not beveled to an extent that will allow easy assembly of the pipe joint
  - k. Gaskets which are defective or of the wrong material
  - l. Lack of joint materials, improper or defective joint materials
  - m. Bolting of the wrong material or size
  - n. Electro-galvanizing or other exterior plating when hot-dip galvanizing is required
  - o. Non-timely or non-submittal of all required certifications, incorrect/incomplete certifications, or certifications lacking the signature, date and seal of a professional engineer when so required

- p. Flanges which are too thin, not a right angle to the pipe centerline, or otherwise distorted
- q. All other flaws or defects which, in the opinion of the Engineer whose decision shall be final, adversely affect the assembly and/or function of the piping system as intended.

## 2.02 PIPE AND FITTINGS: POLY VINYL CHLORIDE (PVC)

### A. TYPE PSM SDR-26 PVC SEWER PIPE AND FITTINGS

#### 1. Type PSM SDR-26 PVC Sewer Pipe

- a. Type PSM SDR-26 PVC Sewer Pipe for sewer mains and laterals shall conform to ASTM Standard D3034, "Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings", except as modified below.
- b. Pipe shall be made of PVC plastic having a cell classification of 12454-B, 12364-B, 12364-C or 13364-B as defined in ASTM Standard D1784, "Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds".
- c. The PVC compounds used in the manufacture of the gravity sewer pipe shall be as listed in the Plastic Pipe Institute (PPI) Technical Report TR-4.
- d. The PVC pipe shall be push-on type, with bells, spigots and elastomeric gaskets, in accordance with ASTM Standard D3034, and in accordance with ASTM Standard D3212, "Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals", except as otherwise modified herein. The gaskets shall be the sole element depended upon to make the joint flexible and watertight. Joints using solvent cement will not be permitted. The pipe bells shall have an annular recess or race to seat and retain the gasket, and the gaskets may be either prepositioned by the manufacturer or shipped separately in suitable protective containers. Pipe spigots shall be beveled. Pipe bells shall be extruded integral with the pipe barrel with a thickness equal to or greater than that of the barrel. Manufacturer's allowable pipe joint gap data shall be provided as part of the shop drawing submittal for piping.
- e. The gaskets shall be fabricated from a high-grade elastomer compound in accordance with ASTM Standard F477, "Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe", except as otherwise modified herein. The basic polymer for the gaskets shall be synthetic rubber. Natural rubber gaskets or gaskets with both natural and synthetic

rubbers will not be permitted. Gaskets shall be continuous, elastomeric, rubber ring type.

- f. Nominal laid length of Type PSM SDR-26 PVC sewer pipe shall be 13 feet.
- g. Type PSM SDR-26 PVC sewer pipe shall be double labeled (180 degrees apart) as follows at intervals of five (5) feet or less:
- h. Manufacturers: JM Eagle, Diamond Plastic Corp, North American Pipe, or approval equal
- i. Date of manufacture - Manufacturer's name & Code
- j. - Nominal size - Cell classification - "Type PSM
- k. SDR-26 PVC Sewer Pipe" - "Specification D3034"

2. Type PSM SDR-26 PVC Sewer Fittings

- a. Type PSM SDR-26 PVC Sewer Fittings shall conform to ASTM Standard D3034, "Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings", and to the specifications for Type PSM SDR-26 PVC sewer pipe herein, except as modified below.
- b. The waterway and bell wall thickness shall be equal to or greater than that specified for pipe, except that for reducing fittings or those with smaller inlets, the wall thickness of each inlet shall be no less than the minimum wall thickness for that size pipe.
- c. Only molded fittings are accepted. Fabricated fittings are not acceptable.

B. AWWA C900 AND C905 PVC (CI) PIPE AND FITTINGS

1. TYPE C900 and C905 PVC PIPE

- a. AWWA C900 Pipe for water and sewer mains and laterals shall conform to ANSI/AWWA C900, "(PVC) Pressure Pipe and Fabricated Fittings", for 4-inch through 12-inch PVC pressure pipe and fabricated fittings with cast-iron-pipe-equivalent (CI) outside diameter (OD) dimensions and with wall-thickness-dimension ratios (DRs) 14, 18, and 25, except as otherwise modified herein.
- b. AWWA C905 pipe for water and sewer mains and laterals shall conform to ANSI/AWWA C905, "Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14-inch Through 48-inch for Water Transmission and Distribution", for 14-inch through 48-inch PVC pressure pipe and fabricated fittings with cast-iron-pipe-equivalent (CI) and steel-pipe-

equivalent (IPS) outside diameter (OD) dimensions and wall thickness dimension ratios (DRs) of 14, 18, 21, 25, 26, 32.5, 41, and 51, except as otherwise modified herein.

- (1) AWWA C900 and C905 pipe shall be made from PVC thermoplastic having physical and chemical properties which meet or exceed a cell classification of 12454-A or 12454-B virgin compounds as defined in ASTM Standard D 1784.
- (2) The AWWA C900 and C905 pipe shall be push-on type, with bells, spigots and elastomeric gaskets in accordance with ASTM Standard D 3139, "Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals ". The gaskets shall conform to ASTM Standard F477 and shall be synthetic rubber. One gasket shall be furnished with each length of elastomeric-gasket bell-end pipe. Pipe spigots shall be beveled. Pipe bells shall be extruded integral with the pipe barrel with a thickness equal to or greater than that of the barrel.
- (3) Nominal laid length of AWWA C900 and C905 PVC (CI) pipe shall be 20 feet.
- (4) The C900 and C905 pipe shall be labeled with the following at intervals of not more than five (5) feet:

Date of manufacture - Manufacturer's Name & Code

- Nominal size - "(CI)" - DR number – Pressure Class – Test Pressure for Hydro Tested or “NOT HYDROSTATIC PROOF TESTED” – AWWA designation number – Manufacturer’s name or trade mark and production run or lot code – Seal (Mark) of the testing agency verifying suitability of material for potable water service (must be NSF).

- (5) Couplings and fabricated fittings shall be marked with:

Nominal Size – “(CI)” – Deflection angle, if applicable – “PVC” – AWWA Pressure Class – AWWA designation number of the applicable standard (C900 or C905) – Manufacturer’s name or trademark - Seal (Mark) of the testing agency verifying suitability of material for potable water service (must be NSF).

2. TYPE C900 and C905 PVC FITTINGS

- a. Fittings for AWWA C900 and C905, PVC (CI) shall conform to the requirements of ASTM Standard D1784 and the specifications for AWWA C900 and C905, PVC (CI) pipe herein, except as modified below.
- b. All fittings for C900 pipe shall be manufactured from PVC compound conforming to ASTM Standard D 1784-11. Fittings shall conform to the thickness requirements of DR18. All fittings, except wye branches, shall be Class 235 and shall be manufactured to withstand 755 psi quick burst pressure tested in accordance with ASTM Standard D 1599-99, "Standard Test Method for Resistance to Short-Time Hydraulic Pressure of Plastic Pipe, Tubing, and Fittings", and withstand 500 psi for a minimum of 1,000 hours tested in accordance with ASTM Standard D1598-02, "Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure".
- c. All fittings for C905 pipe shall be manufactured from PVC compound conforming to ASTM Standard D1784-11. Fittings shall conform to the thickness requirements of DR18 for sizes 14 through 30-inch and DR25 for 36 through 48-inch. All fittings, except wye branches, shall be Class 235 for sizes 14 through 30-inch and Class 165 for 36 through 48-inch. Fittings 14 through 30-inch shall be manufactured to withstand 755 psi quick burst pressure tested in accordance with ASTM Standard D1599-99, "Test Method for Short-Time Hydraulic Failure of Plastic Pipe, Tubing, and Fittings" and withstand 500 psi for a minimum of 1,000 hours tested in accordance with ASTM Standard D1598-02, "Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure". Fittings 36 through 48-inch shall be manufactured to with-stand 535 psi quick burst pressure tested in accordance with ASTM Standard D1599-99, "Test Method for Short-Time Hydraulic Failure of Plastic Pipe, Tubing, and Fittings" and withstand 350 psi for a minimum of 1,000 hours tested in accordance with ASTM Standard D 1598-02, "Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure".

3. JOINT RESTRAINTS FOR C900 AND C905 PVC PRESSURE PIPE

- a. For restraining C900 and C905 PVC pressure pipe and fittings, refer to Section 2.01.D.3, "Mechanical Joint and Push-on Joint "Megalug®"-type Restraining Systems", elsewhere in this specification.

C. MANHOLE COUPLINGS FOR TYPE PSM SDR-35 PVC SEWER PIPE

1. Manhole couplings for Type PSM SDR-35 PVC sewer pipe shall conform to the requirements specified herein for type PSM SDR-35 PVC sewer fittings and shall be completely coated on the exterior with fine aggregate bonded to the PVC surface.

D. MANHOLE COUPLINGS FOR AWWA C900 and C905, PVC (CI) PIPE

1. Manhole couplings for AWWA C900 and C905 PVC (CI) pipe shall conform to the requirements specified hereinbefore for AWWA C900 and C905, PVC (CI) fittings, and shall be completely coated on the exterior with fine aggregate bonded into/to the PVC surface.

E. ADAPTER COUPLINGS

1. Adapter couplings shall have adjustable stainless-steel shear rings. Insert shall be pro-vided with coupling. Clamps shall be all stainless steel.

F. SMALL DIAMETER PVC PIPE AND FITTINGS (SCHEDULES 40 AND 80)

1. Poly (Vinyl Chloride) (PVC) pipe and fittings specified herein are small diameter PVC with threaded, flanged and solvent cemented joints. All PVC pipe and fittings shall be made from high impact, rigid poly vinyl chloride compounds. Pipe and fittings shall be marked indicating size, type and schedule, ASTM Designation, manufacturer or trademark, and shall bear the NSF (National Sanitation Foundation) seal of approval. Wherever the abbreviation PVC is used in these Specifications in relation to pipe and fittings, it shall mean poly (vinyl chloride) plastic pipe and fittings as specified herein.
2. PVC pipe shall be Schedule 80 as called for on the Plans or by the Engineer, Type I, Grade I, or Class 12454B with socket ends, and shall comply with ASTM Standard D1785, "Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80 and 120".
3. Schedule 80 socket-type fittings shall comply with ASTM Standard D2467, "Socket-Type Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80" and D2464 "Specification for Threaded Poly Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80, for threaded fittings.
4. Joining cement for PVC pipe and fittings shall comply with ASTM Standard D2564, "Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings". Cemented joints shall be made in accordance with ASTM Standard D2855, "Recommended Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings".

5. Flanges: One-piece molded hub type flat face flanges, 125-pound standard as specified under fittings hereinbefore.
6. Gaskets: Full faced, 1/8-inch thick, neoprene (for sewer) or SBR (for water).
7. AISI Type 316 stainless steel, ASTM A193, Grade B8M hex bolts and ASTM A194 Grade E8 hex head nuts. Bolts shall be fabricated in accordance with ANSI B 1812 and provided with washers of the same materials as the bolts.

G. CERTIFICATION

1. The Contractor shall provide the City with notarized Certifications, signed by an authorized agent of the manufacturer, that the material was manufactured, sampled, tested, and inspected in accordance with these specifications, and has been found to meet the requirements. A report of said test results shall be furnished.
2. No pipe or fitting will be accepted for use in the project until the Certifications have been sub-mitted to and approved by the City.

H. HANDLING AND STORING PVC PIPE AND FITTINGS

1. Pipe and fittings shall at all times be handled with great care to avoid damage. In loading or unloading operations, the manufacturer's unitized package of pipe and/or fittings shall be lifted with a forklift or other suitable equipment in such a manner as to prevent damage. Pipe may be unloaded by individual lengths. However, each length shall be slid or rolled on skidways in such a manner that the pipe is not dropped, and to avoid any shock. Under no circumstances shall pipe and/or fittings be dropped or allowed to roll or slide against obstructions.
2. Pipe and/or fittings having ultraviolet degradation, warpage, impact damage, abrasion damage, or gouges or cuts will not be accepted. Bell ends showing compression set, damage or deformation will not be acceptable.
3. Gaskets, if not prepositioned in the bell ends, shall be stored and shipped in suitable protective containers. Gaskets shall not be exposed to excessive heat, direct sunlight, oil or grease.
4. Pipe and fittings shall be stored in a manner that will prevent warpage or other damage as previously specified.
5. If the pipe and/or fittings are to be stored for any period in excess of six months in direct sunlight the items shall be covered with an opaque material. The cover shall be placed in such a manner that will permit air circulation above and around the items being covered to prevent excessive heat accumulation.



6. Pipe and fittings shall be manually or mechanically lowered into the trench for installation, and shall not be thrown, dropped or pushed in the trench.

#### 2.03 PIPE AND FITTINGS: COPPER

- A. Pipe: Copper pipe shall be Type K for interior piping and Type K Soft Temper for exterior piping, both conforming to ASTM B88, seamless, round, drawn tubing.
- B. Fittings: Solder joint fittings shall be wrought copper and bronze fittings conforming to ANSI B16.22 or cast brass fittings conforming to ANSI Standard B16.18. Fittings for use with copper tubing shall be one of the following:
  1. Cast Bronze Solder-Joint Fittings: Solder joint fittings of this type shall be cast bronze fittings conforming to ANSI B16.18, "Cast Brass Solder-Joint Fittings", and ASTM Standard B62, "Composition Bronze or Ounce Metal Castings", as manufactured by Chase Brass and Copper Co., Stanley G. Flagg & Co., Inc., or approved equal.
  2. Wrought Copper Solder-Joint Fittings: Solder joint fittings of this type shall be wrought copper fittings in accordance with ANSI B16.22, "Wrought Copper and Bronze Solder-Joint Pressure Fittings".
- C. Solder: Solder shall consist of 95 percent tin and 5 percent antimony. Soldering shall be in conformance with Section 3 of the Copper and Brass Research Association Copper Tube Handbook.
- D. Connection of copper pipe or fittings with galvanized pipe or fittings shall be made with dielectric fittings.

#### 2.04 PIPE AND FITTINGS: GALVANIZED STEEL

- A. Steel pipe, except as otherwise specified below, shall be Schedule 40, galvanized, seamless steel pipe, conforming to ASTM Standard A53, "Pipe, Steel Black and Hot-Dipped, Zinc-Coated Welded and Seamless", Type S, Grade A or B. Black steel pipe may be used in fabricating items which are to be hot-dip galvanized after fabrication.
- B. Screwed fittings, except as otherwise specified, shall be 150 psi galvanized malleable iron. Screwed unions shall be galvanized malleable iron with ground brass seats. Pipe threads shall be American Standard B2.1 NPT. Joint compound shall be used on all threaded joints, applied to the male threads only.
- C. Furnish data certified by the manufacturer that the pipe and fittings are of the material specified. No piping will be accepted or used in construction until certificates have been submitted to and approved by the Engineer of Record.

## 2.05 PIPE AND FITTINGS: VITRIFIED CLAY

- A. Vitrified clay pipe and fittings for gravity sewers shall be extra-strength, non-perforated. Pipe and fittings shall conform to the latest edition of ASTM Standard C700, "Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated", and the following requirements.
- B. A single fracture or crack passing through socket of the pipe bell and exceeding a length of one-half ( $\frac{1}{2}$ ) inch in any direction shall be cause for rejection of the pipe. This requirement supersedes the portion of the ASTM Specifications cited above in conflict herewith.
- C. The Contractor shall furnish certification from the manufacturer that the pipe and fittings used meet the requirements of ASTM Specifications C700.
- D. The manufacturer shall furnish certification that the pipe and fittings supplied meet the requirements of ASTM Standard C700, latest edition. The Contractor shall be prepared to produce said certification when requested by the City.
- E. Only factory bonded joints will be permitted for all vitrified clay pipe. The joints shall have rubber "O" ring type compression seals conforming to "Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings", ASTM C425, latest edition.
- F. City approved pipe joints are Polyester Ring-Type joints as manufactured by Logan Clay Products Company under the trade name of "Logan-O-Ring", Can-Tex Industries under the trade name of "Can-O-Lock," or approved equal.
- G. Where cast iron soil pipe or ductile iron pipe laterals are used with vitrified clay mains, the wye or tee shall be vitrified clay. For the joint between the vitrified clay wye or tee and the lateral pipe use FERNCO "Donut" No. 6-10-601 with E.H.C.I. soil pipe and "Donut" No. 6-08-607 with ductile iron laterals, or approved equals. When using E.H.C.I. soil pipe with ductile iron tees or wyes, use transition gasket by Romac or approved equal.

## 2.06 HIGH DENSITY POLYETHYLENE (HDPE) PIPE

- A. Smooth wall high density polyethylene pipe shall be a Type III, Class C, Category 5, Grade P34; PE 3408; as defined in ASTM D1248. Minimum classification, as given by ASTM D3350, shall be PE 335434C. Pipe shall meet the standards of ASTM F714, as modified herein, including the "Government/Military Procurement" sections. Minimum hydrostatic design basis shall be 1600 psi. In all cases, hydrostatic design basis and pressure rating shall be as determined using the methods of ASTM F714. Pipe of this type shall be butt-fusion welded at joints. All welding of joints shall be in strict conformity with the recommendations of the pipe manufacturer and by a firm or individual recommended to the Engineer of Record in writing by the manufacturer.
- B. As a part of the shop drawing submittals under Section 01300, "Submittals", the Contractor shall furnish the following signed by a Florida Registered Engineer, all calculations to determine, the pipe thickness, SDR rating, allowable stresses, in

accordance with ASME B31.8 -1992, Table A842.22 and recommended coating, as required by the pipe manufacturer.

2.07 HIGH DENSITY POLYETHYLENE (HDPE) FOR USE IN POTABLE WATER SERVICES 2-INCH NOMINAL DIAMETER AND LESS

A. HDPE PIPE FOR WATER SERVICES:

1. All 2-inch high density polyethylene pipe used for services shall be IPS-OD-controlled with Standard Outside Dimension Ratio (SODR) of 9, pressure rating of 200 psi, nominal outside diameter of 2.375-inches, minimum wall thickness of 0.264-inches, PE 3408, all in conformance with ASTM D3035-95 "Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter".
2. Pipe shall conform with ANSI/AWWA C901-96 "Polyethylene (PE) Pressure Pipe and Tubing, ½ In. (13 mm) Through 3 In. (76 mm), for Water Service" as modified herein.
3. Pipe shall have a (natural) inner core with a blue colored outer shell.
4. Pipe shall have footage marks at a maximum interval of every two feet.
5. Polyethylene material shall have a minimum cell classification in accordance with ASTM D3350-00 "Polyethylene Plastics Pipe and Fitting Materials" of 345444D for the core, which shall be 100% virgin material, and 345444E for the outer shell. Note that both of these materials are UV stabilized as signified by the "D" for natural colored and "E" for the colored shell.
6. Pipe shall conform with NSF 61 or 14.
7. Manufacturer shall supply certification of compliance with all of the above requirements. Certification shall ship with the pipe on material sold to the City and shall always be submitted with shop drawings and catalogue cuts. When required by the Director of the Department of Public Utilities or his designee, certification shall be signed and sealed by a professional engineer licensed to practice in the state in which the manufacturer is located or in the State of Florida.

B. HDPE TUBING FOR WATER SERVICES:

1. All 1-inch high density polyethylene tubing used for services shall be CTS-OD-controlled with Standard Outside Dimension Ratio (SODR) of 9, pressure rating of 200 psi, nominal outside diameter of 1.125-inches, minimum wall thickness of 0.125-inches, PE 3408, all in conformance with ASTM D2737-99 "Polyethylene (PE) Plastic Tubing".

2. Tubing shall conform with ANSI/AWWA C901 "Polyethylene (PE) Pressure Pipe and Tubing, ½ In. (13 mm) Through 3 In. (76 mm), for Water Service" as modified herein.
3. Tubing shall have a (natural) inner core with a blue colored outer shell.
4. Tubing shall have footage marks at a maximum interval of every two feet.
5. Polyethylene material shall have a minimum cell classification in accordance with ASTM D3350-00 "Polyethylene Plastics Pipe and Fitting Materials" of 345444D for the core, which shall be 100% virgin material, and 345444E for the outer shell. Note that both of these materials are UV stabilized as signified by the "D" for natural colored and "E" for the colored shell.
6. Tubing shall conform with NSF 61 or 14.
7. Manufacturer shall supply certification of compliance with all of the above requirements. Certification shall ship with the tubing on material sold to the City and shall always be submitted with shop drawings and catalogue cuts. When required by the Director of the Department of Public Utilities or his designee, certification shall be signed and sealed by a professional engineer licensed to practice in the state in which the manufacturer is located or in the State of Florida.

C. MECHANICAL FITTINGS UTILIZED WITH HDPE PIPE AND TUBING WATER SERVICES

1. Mechanical fittings utilized with HDPE pipe and tubing for water services shall conform with ANSI/AWWA C800, "Underground Service Line Valves and Fittings", as modified here-in.
2. Fittings shall utilize AWWA Standard (Mueller) threads on tapped pipe and tapping saddles
3. Fittings shall be designed and manufactured to withstand a sustained working pressure of 150 psi and to restrain the pipe against pull-out under loading beyond that causing tensile yield in the HDPE pipe or tubing connected.
4. The manufacturer shall supply certification of these capabilities and fittings shall not be accepted or installed without said certification. If fittings are being supplied to the City, the certification shall ship with the fittings and payment will not be made without this certification. At the discretion of the Engineer, this certification may be required to be signed and sealed by a professional engineer licensed to practice in the state where the supplying firm is located or in the State of Florida. His decision in this regard shall be final.
5. In all cases, fittings shall be installed in strict accordance with the manufacturer's instructions.

## 2.08 WALL SLEEVES, PIPES AND CASTINGS

- A. Wall Sleeves: Wall sleeves shall be of cast iron, ductile iron or carbon steel with steel galvanized after fabrication, under wall pipe. Sleeves shall be provided with seals and shall be oversized 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. Escutcheons shall be provided at walls and floor to completely conceal the sleeves smaller than 3-inches. Escutcheons shall be brass or cast iron, nickel plated split-type.
- B. Interior: Wall sleeves shall be installed for all piping passing through interior walls and floors, except where noted on the Drawings. Sleeves shall be of sufficient size to pass the pipe without binding.
- C. 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 treated sewage effluent and groundwater. Bolts, nuts and hardware shall be A-316 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.
- D. All piping passing through exterior walls and base slabs shall be provided with wall pipes. All wall pipes shall be of ductile iron and shall have an intermediate flange or waterstop located in the center of the wall. 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 outside coating.

## 2.09 STEEL CASING (JACKING AND BORING)

See Section 15070, "Jacking and Boring"

## PART 3 - EXECUTION

### 3.01 GENERAL:

- A. The Contractor shall provide all barricades and/or flashing warning lights necessary to warn of the construction throughout the Project.
- B. Pipe and fittings shall at all times be handled with great care to avoid damage. In loading and unloading, they shall be lifted with cranes or hoists or slid or rolled on skidways in such manner as to avoid shock. Under no circumstances shall this material be dropped or allowed to roll or slide against obstructions.

- C. All work shall be performed by skilled workmen experienced in similar installations. All pipe and fittings shall be adequately supported by clamps, brackets, straps, concrete supports, rollers or other devices as shown and/or specified. Supports or hangers shall be spaced so that maximum deflection between supports or hangers shall not exceed 0.050 inch for pipe filled with liquid, but shall not be further than 6 feet apart, whichever is closer, unless otherwise shown. All pipe supports shall be secured to structures by approved inserts or expansion shields and bolts.
- D. All pipe shall be thoroughly cleaned internally before being installed. All pipes, except oxygen service, air and gas, shall be flushed with water and swabbed to assure removal of all foreign matter before installation. Air and gas piping shall be tapped with a hammer to loosen scale or other foreign matter that might be within the pipe, then thoroughly blown with a high pressure air hose. Air shall be from the Contractor's air compressor.
- E. Whenever possible, the pipe will be installed with minimum 48-inches of cover, however, due to the numerous utilities in the area, this burial could change substantially.
- F. At all horizontal or vertical pipe deviation, the Contractor shall install both restrained pipe and thrust blocks. Joints may only be opened to adjust alignment by half of the AWWA or manufacturer's recommended opening (which is smaller).
- G. Pipe Sleeves and Wall Castings: Pipe sleeves and wall castings shall be provided at the locations called for on the Drawings and/or specified herein. These units shall be as detailed and of the material as noted on the Drawings and/or specified herein. 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.
- H. Tie Rods: 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. Tie rods shall be installed as recommended by the manufacturer.

### 3.02 EXCAVATION FOR PIPING

- A. The Contractor shall make all excavation necessary for the construction of the pipelines, connections, valves and appurtenances, to the lines and grades shown on the Plans.
- B. The trench shall be excavated at least 6 inches below pipe laying grade as shown on the Plans. All sheeting and shoring shall be installed at the Contractor's expense where it is necessary for pipe installation and property protection or required by the Trench Safety Act. The cost of dewatering any excavation shall be at the Contractor's expense. The disposal of water removed from an excavation shall be in a manner which will not create a hazard or be detrimental to the public health or to public or private property.

- C. The Contractor shall obtain all necessary permits approving the location and proposed method of disposal before discharging water from any excavation into any portion of the public right-of-way or into any existing drainage structure or facility. All construction signs required shall be provided by the Contractor.

### 3.03 INSTALLATION OF PIPE, FITTINGS AND VALVES

#### A. GENERAL:

1. The design Drawings are in some cases diagrammatic. They may not show every bend, off-set, elbow or other fitting which may be required in the piping for installation in the space allotted. Careful coordination of the work of this Section with that of Division 2 and 16 is necessary to avoid conflicts. Install gravity lines at uniform grade to low point after field verification of low point invert.
2. The centerline of the pipe shall not vary by more than 2 inches from the location shown on the Plans and the top of the pipe shall not vary by more than 2 inches from the established grade, except at points where this tolerance must be changed to clear obstructions, or make connections. Deviation from this location will be permitted only upon written instructions from the Engineer.
3. Sandbags may be used to support the pipe in the ditch, but no pipe shall be laid on blocks, except by the written permission of the Engineer of Record. The trench shall be dewatered to the extent that all poured lead joints in cast iron pipe and fittings may be made perfectly dry. Flanged joints, mechanical joints and push-on joints in cast iron pipe and fittings may be made under water.

#### B. INSTALLATION OF DUCTILE IRON PIPE:

1. All bends, tees, and plugs, unless otherwise specified, shall be backed with concrete to undisturbed ground. Provision shall be made to prevent concrete from adhering to plugs or bolts.
2. Bolts, nuts and rubber gaskets for use in flanged and mechanical joints shall be stored under cover. Gaskets shall not be exposed to heat, light or any petroleum products, shall be kept clean and shall not be handled with greasy or dirty hands.
3. Before making up flanged joints in cast iron pipe and fittings, the back of each flange under the bolt heads, and the face of each flange shall have all lumps, blisters and excess bituminous coating removed and shall be wire brushed and wiped clean and dry.
4. Before laying the ductile iron pipe, all lumps, blisters and excess coal-tar coating shall be removed from the bell and spigot ends of each pipe and the outside of the spigot and the inside of the bell wire brushed and wiped clean and dry. The entire gasket groove area shall be free of bumps or any foreign matter which

might displace the gasket. The cleaned spigot and gasket shall not be allowed to touch the trench walls or trench bottom at any time. Vegetable soap lubricant shall be applied in accordance with the pipe manufacturer's recommendations, to aid in making the joint. The workmen shall exercise caution to prevent damage to the gasket or the adherence of grease or particles of sand or dirt. Deflections shall be made only after the joint has been assembled.

5. Cutting of ductile iron pipe for inserting valves, fittings, etc., shall be done by the Contractor with a mechanical pipe saw in a neat and workmanlike manner without damage to the pipe, the lining, or the coating.
6. Unless otherwise directed, ductile iron pipe shall be laid with the bell ends facing in the direction of laying; and for lines on an appreciable slope, the bells shall, at the discretion of the Engineer, face upgrade.
7. Push-on and mechanical joints in ductile iron pipe and fittings shall be made in accordance with the manufacturer's standards except as otherwise specified herein. Joints between push-on and mechanical joint pipe and/or fittings shall be made in accordance with AWWA Standard Specification C600, "Installation of Ductile Iron Water Mains and their Appurtenances, except that deflection at joints shall not exceed one-half of the manufacturer's recommended allowable deflection, or one-half of the allowable deflection specified in AWWA C600, whichever is the lesser amount.
8. Flanged joints shall be used only where indicated on the Plans. Before making up flanged joints in the pipeline, the back of each flange under the bolt heads and the face of each flange shall have all lumps, blisters and excess bituminous coating re-moved and shall be wire brushed and wiped clean and dry. Flange faces shall be kept clean and dry when making up the joint, and the workmen shall exercise caution to prevent damage to the gasket or the adherence of grease or particles of sand or dirt. Bolts and nuts shall be tightened by opposites in order to keep flange faces square with each other, and to insure that bolt stresses are evenly distributed.
9. Bolts and nuts in flanged and mechanical joints shall be tightened in accordance with the recommendations of the pipe manufacturer for a leak-free joint. The workmen shall exercise caution to prevent overstress. Torque wrenches shall be used until, in the opinion of the Engineer, the workmen have become accustomed to the proper amount of pressure to apply on standard wrenches.

C. INSTALLATION OF PVC PIPE:

1. In the installation of glue joint PVC pipe, the pipe shall first be cut square and smooth. Wipe all surfaces to be connected with a cloth moistened with an appropriate solvent and remove any foreign matter from socket of fitting. Using



an ordinary paint brush of width about equal to the nominal pipe size, apply a generous coat of cement to inside and shoulder of socket, flowing on but not brushing out. A similar coat shall then be applied to the end of the pipe for at least the same distance on the pipe as the depth of socket, and to the cut end. Pipe and fittings shall then be pressed firmly together, and the pipe turned a quarter to a half turn to evenly distribute the cement. The cementing and joining operation must not exceed one minute. Allow 24 hours setup time before applying pressure. Sand shall be used as backfill material around pipe installed underground.

2. Thread Sealant: Teflon tape.
3. All rigid PVC pipe shall be cut, made up, and installed in accordance with the pipe manufacturer's recommendations. Plastic pipe shall be laid by snaking the pipe from one side of the trench to the other. Offset shall be as recommended by the manufacturer for the maximum temperature variation between time of solvent welding and during operation.
4. Schedule 80 pipe shall not be threaded. Use Schedule 80 threaded nipple where necessary to connect to threaded valve or fitting.
5. Only strap wrenches shall be used for tightening threaded plastic joints, and care shall be taken not to over tighten these fittings.
6. Provide adequate ventilation when working with pipe joint solvent cement.
7. Testing: All lines shall be hydrostatically tested at the pressures specified elsewhere herein or at the design pressures.
8. Supports and Hangers: In accordance with the manufacturer's recommendations.

D. INSTALLATION OF COPPER PIPE:

1. Tubing above ground shall, whenever possible, be run in full lengths between fittings, valves and connections, and joints shall be kept to a minimum.
2. All connections shall be made without sharp bends or kinks in the tubing.
3. Above ground tubing shall be supported at short intervals to prevent sagging and vibration.
4. All copper pipe shall be reamed to full diameter before joining. The ends of pipe and the inside of fittings shall be cleaned, and flux applied to the entire area of pipe to be soldered.

E. JOINT PIPE:

1. Threaded Pipe: Ream all pipe after cutting and before threading. Use non-hardening pipe compound "Tite-Seal" (or approved equal) on male threads only.
2. Provide nipples of same material and weight as pipe used. Provide extra strong nipples when length of unthreaded part of nipple is less than 1-1/2".
3. Provide reducing fittings rather than bushings where changes in pipe sizes occur.
4. Provide dielectric unions or flanges between copper and steel piping and between brassware and steel. Do not use steel and copper piping in the same system without such isolation.

F. UNIONS:

- A. Provide unions or flanges in all domestic water service lines at each piece of equipment, specialty valves or at other locations required for ready disconnect.

G. PIPE PROTECTION:

1. Paint all uninsulated metal (ductile iron or steel) piping underground with two coats of asphaltic paint.
2. Wrap soil pipe that touches metal or is exposed to masonry with a layer of 6 mil polyethylene.
3. Spirally-wrap all pipelines embedded in concrete with two layers of 30 lb. felt.
4. Coat all exposed threads on galvanized steel pipe after assembly with two coats of zinc chromate.

H. CLEANING AND TESTING:

1. All of the piping installed under this project shall be tested as follows and as directed by the Engineer:
2. With exceptions as noted below, all ductile iron piping installed under this Contract shall be cleaned and tested according to Section 15995, "Pipeline Testing and Disinfection", and as modified below:
  - a. Only potable water piping shall be disinfected.
  - b. No leakage shall be permitted for any flanged-joint, or above ground piping.

3. Unless otherwise specified elsewhere herein, all PVC pressure system bushings and galvanized steel piping shall be tested at 150 psig. No leakage will be permitted.

I. INSTALLATION OF ABOVEGROUND AND EXPOSED PIPING:

1. Aboveground and exposed pipe fittings, valves and accessories shall be installed as shown or indicated on the Drawings.
2. 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 rather than bushings. Pipe connections shall be made in accordance with the details shown and manufacturer's recommendations. Open ends of pipelines 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 and as required to insure adequate support of the piping.
3. Welded connections shall be made in conformity with the requirements of AWWA Standard C 206 and shall be done only by qualified welders. The Engineer may, at his option, require certificates that welders employed on the work are qualified in conformity with the requirements of this standard and/or sample welds to verify the qualifications of the welders. Before testing, field-welded joints shall be coated with the same material used to coat the pipe in accordance with the requirements of AWWA.
4. Flanged joints shall be made up by installing the gasket between the flanges. The threads of the bolts and the faces of the gaskets shall be coated with a suitable lubricant immediately before installation.
5. Joints using Dresser couplings shall be made up as recommended by the manufacturer.
6. Use of perforated band iron (plumber's strap), wire or chain as pipe hangers will not be acceptable. Supports for pipe less than 1-1/2 inches nominal size shall not be more than 8-feet on centers and pipe 2-inches nominal size and larger shall be supported at not more than 10 feet on centers, unless otherwise indicated. Supports for PVC pipe shall be spaced one-half the distance specified above unless otherwise indicated. Any noticeable sagging shall be corrected by the addition of extra supports at the Contractor's expense.

J. INSTALLATION OF HDPE SERVICES:

1. All HDPE services require the use of a 10-gauge stranded copper blue tracer wire.

### 3.04 FIELD QUALITY CONTROL

- A. All water mains shall be flushed to remove all sand, debris, rock and other foreign matter. Dispose of the flushing water without causing a nuisance or property damage.
- B. Pressure and leakage testing shall follow the requirements of Section 15995, "Pipeline Testing and Disinfection".
  - 1. Where infiltration or exfiltration exceeds the allowable limits specified herein, the defective pipe, joints, or other faulty construction shall be located and repaired by the Contractor at no additional cost or time impact to the Contract.
  - 2. The Contractor shall provide all labor, equipment and materials, and shall conduct all testing required under the direction of the Engineer of Record. No separate payment will be made for this work and the cost for this work shall be included in the prices quoted in the Proposal.
  - 3. The Contractor shall locate and repair all leaks until the leakage is reduced to the limits specified. Any observed leaks or obviously defective joints or pipes shall be repaired or replaced as directed by the Engineer of Record, even though the total leakage is below that specified above.

END OF SECTION

## SECTION 15100

### VALVES, GENERAL

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

- A. The Contractor shall provide all tools, supplies, materials, equipment, and labor necessary for furnishing, epoxy coating, installing, adjusting, and testing of all valves and appurtenant work, complete and operable, in accordance with the requirements of the Contract Documents. Where buried valves are shown, the Contractor shall furnish and install valve boxes to grade, with covers, extensions, and position indicators.
- B. The provisions of this Section shall apply to all valves and valve operators specified in the various Sections and Division 2 of these Specifications except where otherwise specified in the Contract Documents. Valves and operators in particular locations may require a combination of units, sensors, limit switches, and controls specified in other Sections of these Specifications.

##### 1.02 RELATED WORK

- A. Section 02000 - Water Distribution System
- B. Section 02222 - Excavation and Backfill for Utilities and Structures

##### 1.03 REFERENCE STANDARDS

- A. Codes: All codes, as referenced herein, are specified in Section 01070
- B. Commercial Standards:
  - ANSI B16.5 Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and Other Special Alloys
  - ANSI/ASME B31.1 Power Piping
  - ASTM A 36 Specification for Structural Steel
  - ASTM A 48 Specification for Gray Iron Castings
  - ASTM A 126 Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings
  - ASTM A 536 Specification for Ductile Iron Castings
  - ASTM B 61 Specification for Steam or Valve Bronze Castings
  - ASTM B 62 Specification for Composition Bronze or Ounce Metal Castings
  - ASTM B 148 Specification for Aluminum-Bronze Castings
  - ASTM B 584 Specification for Copper Alloy Sand Castings for General Applications
  - ANSI/AWWA C500 Gate Valves for Water and Sewerage Systems

ANSI/AWWA C502	Dry-Barrel Fire Hydrants
ANSI/AWWA C503	Wet-Barrel Fire Hydrants
ANSI/AWWA C504	Rubber-Seated Butterfly Valves
ANSI/AWWA C507	Ball Valves 6 Inches Through 48 Inches
AWWA C508	Swing-Check Valves for Waterwork Service, 2 Inches Through 24 Inches NPS
ANSI/AWWA C509	Resilient-Seated Gate Valves for Water and Sewage Systems
ANSI/AWWA C511	Reduced-Pressure Principle Backflow-Prevention Assembly
AWWA C550	Protective Interior Coatings for Valves and Hydrants
SSPC-SP-2	Hand Tool Cleaning
SSPC-SP-5	White Metal Blast Cleaning

#### 1.04 SUBMITTALS

- A. Shop Drawings: Shop drawings of all valves and operators including associated wiring diagrams and electrical data, shall be furnished as specified in Section 01300 - Submittals.
- B. Valve Labeling: The Contractor shall submit a schedule of valves to be labeled indicating in each case the valve location and the proposed wording for the label.

#### 1.05 QUALITY ASSURANCE

- A. In accordance with the "Reduction of Lead in Drinking Water Act" (Act) enacted by the USEPA on January 4, 2011, effective January 4, 2014 all piping, fittings, fixtures, valves, and other appurtenances used in potable water supply and distribution systems shall be "lead free" as defined in Section 1417(d) of the Safe Drinking Water Act (SDWA). All requirements of the Act as it relates to the products under this section shall be strictly adhered to.
- B. All valves and related appurtenances shall be manufactured in the United States.
- C. Bolts on valve flanges shall be A-316 stainless steel.
- D. Valve Testing: Unless otherwise specified, each valve body shall be tested under a test pressure equal to twice its design water-working pressure.
- E. Bronze Parts: Unless otherwise specified, all interior bronze parts of valves shall conform to the requirements of ASTM B 62, or where not subject to dezincification, to ASTM B 584.
- F. Certification: Prior to shipment, the Contractor shall submit for all valves over 12 inches in size, certified, notarized copies of the hydrostatic factory tests, showing compliance with the applicable standards of AWWA, ANSI, ASTM, etc.

## PART 2 - PRODUCTS

### 2.01 GENERAL

- A. The Contractor shall furnish all valves, gates, valve operating units, stem extensions, operators and other accessories as shown or specified. All valves and gates shall be new and of current manufacture. All non-buried valves, 6-inch and larger, shall have operators with position indicators. Where buried, these valves shall be provided with valve boxes, covers and valve extensions. Valves mounted higher than 6-feet above working level shall be provided with chain operators. All valve boxes shall have a minimum design pressure rating of 150 psi unless otherwise specified elsewhere herein. If two (2") or smaller valves are needed, Nibco T-113-LF shall be used.
- B. Ductile iron parts of valves shall meet the requirements of ASTM A126, "Standard Specifications for Gray Iron Castings for Valves, Flanges and Pipe Fittings, Class 'B'." Flanged ends shall be flat-faced and have bolt circle and bolt patterns conforming to ANSI B16.1 Class 125.
- C. All castings shall be clean and sound, without defects of any kind and no plugging, welding or repairing of defects will be permitted. All bolt heads and nuts shall be hexagonal conforming to ANSI B18.2. Gaskets shall be full-face and made of synthetic elastomers in conformance with ANSI B16.21 suitable for the service characteristics, especially chemical compatibility and temperature. Non-ferrous alloys of various types shall be used for parts of valves as specified. Where no definite specification is given, the material shall be the recognized acceptable standard for that particular application. All nuts, bolts and washers shall be A-316 stainless steel.
- D. All buried valves shall be provided with cast-iron valve boxes unless otherwise indicated. The boxes shall conform to City Standards and be installed perpendicularly, centered around and covering the upper portions of the valve operator. The top of each valve box shall be placed flush with finish grade unless otherwise indicated on the Drawings. Valve boxes shall be as specified elsewhere in this Section.
- E. All buried valves and other valves located below a concrete operating deck or level, specified or noted to be key operated, shall have an operator to finish grade or deck level, non-rising stem, a 2-inch square AWWA nut with skirt, and cover or box and cover, as may be required.
- F. Extension Shafts:
  - 1. A one-piece extension shaft with an AWWA 2-inch square operator nut pinned at the top end and coupling shear pin shall be furnished with valves, where applicable, as shown in the Plans or Standard Details. Extension shafts shall be designed and furnished by the valve manufacturer and shall each be complete with coupling, standard AWWA 2-inch square operating nut with skirt, shear pins and centering-identification plate, for connection to the valve operator (or input)

shaft as specified herein below. Shafts shall be of solid section. Hollow shafting is not acceptable.

2. All operator components between the operating nut and the adjustable stops shall be designed to withstand, without damage, an input torque of 300 ft. lbs. The shaft shall be furnished with an AWWA 2-inch square operating nut with skirt, mounted and pinned to the top of the shaft. A coupling shall be provided for the bottom of the shaft to connect the extension to the valve operator (or input) shaft.
  3. The coupling shall be welded to the bottom end of the extension shaft after the exact required length of the shaft has been determined by field measurement during the valve installation and cut to size. The weld shall be wire brushed and painted with Kop-Coat Super Hi-Gard 891 or approved equal. The sized extension shaft with welded coupling shall be installed to the valve operator shaft and pinned with the coupling shear pin. The welding of the coupling to the extension shaft shall be performed by operators who are certified. The welding shall conform to all of the applicable recommendations of the American Welding Society and the American Institute of Steel Construction.
  4. The pin through the coupling and valve operator (or input) shaft shall be of a larger diameter than the pin through the top nut and extension shaft, so that if torque exceeds the designed limits, the pin through the nut will shear first. Pins shall be either force fit or mechanically locked. Mechanical locking shall be by lock washers, lock nuts, force fit or other sturdy and corrosion resistant means. No roll pins will be allowed. Riveted or welded type pins will not be allowed.
  5. The extension shaft shall also be equipped with a combination centering-identification plate. The combination centering-identification plate, with a drilled or punched center hole, will be slipped onto the shaft prior to welding the shaft's bottom coupling as specified above. The center hole in the plate shall be 1/4 inch larger in diameter than the shaft, maximum. The plate shall be 1/8-inch thick AISI Type 316 stainless steel with an outside diameter of 6-3/4 inches. The top of the plate shall be buffed to remove mill scale, and the following information shall be stamped into the top of the plate in letters and numerals not less than 3/8 inch in height; valve manufacturer; valve type, size and class; direction to open; and number of turns to fully open from a fully closed position. The valves shall open by turning the operating nuts counterclockwise.
- G. Valve Flanges: The flanges of valves shall be in accordance with Section 15060 - Piping and Fittings.
- H. Gate Valve Stems: Gate valve stems shall be of bronze conforming to ASTM B62, containing not more than 5 percent of zinc or more than 2 percent of aluminum. Gate valve stems shall have a minimum tensile strength of 60,000 psi, a minimum yield strength



of 40,000 psi, and an elongation of at least 10 percent in 2 inches, as determined by a test coupon poured from the same ladle from which the valve stems to be furnished are poured. Where dezincification is not a problem, bronze conforming to ASTM B 584 may be used.

- I. Protective Coating: Except where otherwise specified, ferrous surfaces, exclusive of stainless steel surfaces, in the fluid passages of all valves 4-inch and larger shall receive an epoxy coating in accordance with AWWA C550. Flange faces of valves shall not be epoxy coated. The valve manufacturer shall certify in writing that such coating has been applied and tested in the manufacturing plant prior to shipment, in accordance with these Specifications. Exterior coating shall be asphalt varnish conforming to Federal Specification TT-C-494A.
- J. Nuts and Bolts: All nuts and bolts on valve flanges and supports shall be in accordance with manufacturer's recommendations. Where submerged or buried, all nuts, bolts and washers on valve flanges and valve bodies shall be A-316 stainless steel. Nuts, bolts and washers shall be of different grades of stainless steel to prevent galling.
- K. Valve Labeling: A label shall be provided on all shut-off valves exclusive of hose bibs and chlorine cylinder valves. The label shall be of 1/16-inch brass or stainless steel, minimum 2 inches by 4 inches in size, and shall be permanently attached to the valve or on the wall adjacent to the valve or as indicated by the City.
- L. Valve Operators
  - 1. General
    - (a) All butterfly valves, plug valves over 8-inch size and gate valves installed horizontally shall be furnished with geared operators, provided by the manufacturer. All valves of a particular size and pressure rating by a given manufacturer shall be supplied with the same operator. No variation will be permitted during the contract. All valve operators, regardless of type, shall be installed, adjusted, and tested by the valve manufacturer at the manufacturing plant. Operator orientation shall be verified with the City prior to fabrication. If this requirement is not met, changes to orientation shall be made at no cost the City.
    - (b) All operators shall turn counter-clockwise to open. Operators shall have the open direction clearly and permanently marked. Field adjustment and testing of the operators and valves to ensure proper installation and operation shall be the responsibility of the Contractor.
  - 2. Manual Operators
    - (a) All manual operators shall be equipped with AWWA square nuts, handwheels or chain drives as appropriate. Some small (6-inch or less)

valves may be lever operated if so specified elsewhere herein. Where buried, the valves shall have extensions with square nuts or floor stands as indicated on the Drawings. Valves mounted higher than 6 feet above floor or operating level shall have chain operators with chain terminating 4 feet above operating level.

- (b) Operation of valves and gates shall be designed so that the effort required to operate the handwheel, lever or chain shall not exceed 40 pounds applied at the extremity of the wheel or lever. The handwheels on valves 14 inches and smaller shall not be less than 8 inches in diameter, and on valves larger than 14 inches the handwheel shall not be less than 12 inches in diameter.
- (c) Chainwheel operator shall be fabricated of malleable iron with pocketed type chainwheels with chain guards and guides. Chainwheel operators shall be marked with an arrow and the word "open" indicating direction to open. The operators shall have galvanized smooth welded link type chain. Chain that is crimped or has links with exposed ends is not acceptable.

### 3. Electric Motor Operators

- (a) All motorized valves shall be furnished by the Contractor through the valve manufacturers as a complete package. Motor driven valve operators shall be furnished and installed in accordance with the applicable requirements shown on the process and instrumentation diagrams and electrical elementary diagrams. Operators shall comply with AWWA requirements for electrical operators.
- (b) Electric operators including the motor, all required gearing, integral continuous duty rated reversing starter, AC line surge suppressors, controls and switches shall be as manufactured by Rotork, Limitorque, EIM; or equal. The motorized operators for modulating service shall be furnished with an integral position indicator/transmitter/controller. The above unit shall be internally powered, factory calibrated and furnished with adjustable zero, span, gain and deadband controls.
- (c) The position indicator/transmitter shall provide a linear, isolated, 4-20 mA, 24 VDC output to remote instrumentation and controls proportional to 0-100 percent travel span. An external DC power source shall not be required.
- (d) The position controller shall accept a linear 4-20 mA, 24 VDC input signal proportional to 0-100 percent travel span and shall generate appropriate outputs to the reversing starter to open/close the valve until the desired

portion has been reached as determined by the position feedback signal to the position controller. Input signal isolation shall be provided.

- (e) The controller shall be furnished with circuitry to "lock in the last position" upon loss of control signal. Contractor shall be responsible for proper transmitter/controller calibration in accordance with the manufacturer's recommendations.
- (f) Operator capacity shall be adequate to continuously operate the valve under all operating conditions. Unless otherwise indicated, or specified, motor operators shall be furnished complete with motors, limit switch operating mechanisms, travel limit switches, torque switches, transmitters, controllers, starters, lighting and surge suppression, terminal blocks, gear reducers, handwheel, gearing, necessary components, and incidental accessories as follows:
  - i. All phases of the power supply shall be monitored. The contractor shall open de-energizing the motor upon detection of single phasing.
  - ii. Logic circuits shall be protected against spurious voltage spikes, using opto-isolators in circuits connected to any remote input or output signals.
- (g) Enclosure: The starter for 240 volt single phase motor operators and all local devices shall be mounted on a common NEMA 4 and PVC coated cast aluminum enclosure. The enclosure shall be permanently affixed to the valve operator housing.
- (h) Valve Stops: Valve stops for the operators shall be positive in action. Closing shall be complete, and opening full. Stops shall be field adjustable to the required settings. The torque switches shall prevent any excessive mechanical stress or electrical overloading any direction of travel.
- (i) Limit switches and gearing shall be an integral part of the motorized valve operator. The limit switch gearing shall be of the intermittent type, totally enclosed in its own gear case, grease lubricated to prevent direct and foreign matter from entering the gear train and shall be made of bronze or stainless steel. Limit switches shall be of the adjustable type capable of being adjusted to trip at any point between the normal position (full open, or full closed) and 75 percent of the travel to the opposite position.
- (j) Local (Motor) Devices: Local devices shall include, but not be limited to the following:

- i. Torque Switches: Torque switches, responsive to high torque encountered in either direction of travel. A torque switch which has tripped due to mechanical load shall not reset when the operator motor has come to a halt.
  - ii. Limit Switches: Travel limit switches, for opening and closing direction of travel. Contract operations shall be as indicated on the Drawings. If not shown on the Drawings, the operator shall be furnished with a minimum of two DPDT switches. All switches shall be furnished with 5 ampere contacts. Switches shall be connected such that when the valve is fully open, or fully closed, the "open" or "close" light shall be illuminated. All limit switch contacts shall be wired out to a terminal strip so that the electrician in the field does not have to connect to the switches.
  - iii. Local/remote selector switch with phase motor relay and auxiliary to provide dry contacts for collective indication of placement in the "remote" operating mode, the unit is powered, and that all safety/overload interlocks are satisfied to provide the above signal. For further requirements refer to electrical elementary control schematic.
  - iv. Open/close push-button for local manual operation (modulating service).
  - v. Position indicator calibrated to 0-100 percent travel span.
  - vi. Terminals for remote indication of full open, full closed and overload (torque).
- (k) Operating Unit Gearing: The actuator shall be double reaction unit with the capability of quickly changing the output speed with a gear change. The power gearing shall consist of generated spur or helical gears of heat-treated steel, and worm gearing where required by the type of operator. Quarter turn or traveling unit operators do not specifically require worm gearing. The worm shall be of hardened alloy steel and the worm gear shall be of alloy bronze. All power gearing shall be grease-lubricated. Ball or roller bearings shall be used throughout for all motor operators. A mechanical dial position indicator to display valve position in percent of valve opening shall be provided. The gearing shall comply with AWWA requirements.
- (l) Stem Nuts: The actuator for other than quarter turn valves shall have a stem nut of high tensile bronze or other material compatible with the valve stem and suited to the application. The nut arrangement, where

possible, shall be of the two-piece type to simplify field replacement. The stem nut for rising stem valves must be capable of being removed from the top of the actuator without removing the actuator from the valve, disconnecting the electrical wiring, or disassembling any of the gearing within the actuator.

- (m) A handwheel shall be provided for manual operation. The handwheel shall not relocate during hand operation nor shall a fused motor prevent manual operation.
- (n) When in manual operating position, the volt motor driven unit will remain in this position until motor is energized at which time the valve operator will automatically return to electric operation and shall remain in motor position until handwheel operation is desired. This movement from motor operation to handwheel operation shall be accomplished by a positive declutching knob or lever which will disengage the motor and motor gearing mechanically not electrically. Hand operation must be reasonable fast and require no more than 100 lbs. of rim effort at the maximum required torque. It shall not be possible for the unit to be simultaneously in manual and motor operation.
- (o) 240 Volt Single Phase Motors: All motors on valves shall be designed for 240 volts 1-phase 60 Hz power. The motor shall be specifically designed for valve actuator service and shall be of high torque, squirrel cage reversible, totally enclosed, non-ventilated construction, with motor leads brought into the limit switch compartment without having external piping or conduit box. Motor insulation shall be NEMA Class B with maximum continuous temperature rating of 120° C (rise + ambient). Motors shall be sized to have a rated running time at the rated running torque of 15 minutes without exceeding the temperature rating of the insulation system. Running load torque shall be not more than 20 percent of the rated seating/unseating torque.
- (p) Speed-torque curves for the motors and torque calculations for seating, unseating, and running conditions shall be submitted. The maximum valve torque (seating/unseating) shall be less than 50 percent of stall torque or starting torque potential of the motor whichever is greater.
- (q) Operator Type:
  - Type A: Remote set-point using a 4-20 mable analog signal
  - Local Operation
  - i. LOCAL/REMOTE selector

- ii. OPEN/CLOSE pushbuttons
  - iii. Position set-point potentiometer/indicator
  - iv. LOCAL accepts local position set-point
  - v. OPEN/CLOSE indication
  - vi. Fault (torque) indication
  - vii. Remote operation
  - viii. Remote: accept a remote 4-20 mA position set-point
  - ix. Position transmitter 4-20mA signal to RTU (Remote Transmitter Unit)
  - x. Available Ready of Auto to RTU
  - xi. Fault torque status to RTU
- (r) Valve Closure Time shall be 1 minute
- (s) Spare Parts:

The Contractor shall furnish loose, one unit valve operator, complete with all the devices specified herein and with all the features and characteristics similar to the equipment supplied in this Contract. The spare operator shall be delivered to the CITY still in crates.

M. TORQUE LIMITING DEVICE

1. Each valve shall be provided with a torque limiting device designed to protect the actuator and valve parts. The device shall consist of an overtorque protection mechanism enclosed in a hermetically sealed cast iron housing. The mechanism shall be permanently lubricated and factory set to trip between 200 and 220 ft. lbs. of applied torque. The housing shall have integrally cast, 2-inch AWWA operating nut and matching socket to operate and to fit over the actuator or extension shaft nuts, respectively. The socket shall be provided with a set screw to fit the device. The direction of rotation shall be permanently shown with word and arrow next to the operating nut. The entire device shall be coated inside and out with a 2-part epoxy. The torque limiting device shall be as manufactured by Annspace Controls Company of St. Louis, Missouri, or approved equal.

N. FLOOR STANDS

1. Floor stands shall be cast iron, non-rising stem type with lockable hand wheel operator, valve position indicator and stainless steel or bronze extension stem. Hand wheel shall be lockable in the full open and full closed positions. The floor

stand shall be furnished with an armored padlock and six keys. Lock shall be as manufactured by Master, Schlage or equal. Floor stand shall be standard pattern type as manufactured by Clow Corporation, or equal.

O. END CONNECTIONS:

1. The dimensions of end connections shall conform to AWWA Standard C111-85. The end flanges of flanged valves shall conform in dimensions and drilling to ANSI Standard B16.1 for cast iron flanges and flanged fittings, Class 125, unless specifically provided otherwise. The bolt holes shall straddle the vertical center-line.

2.02 PLUG VALVES

- A. Plug valves shall be of the non-lubricated, eccentric type with resilient faced plugs. Port areas shall be at least 80 percent of full pipe area. Bodies shall be semi steel with raised seats. Seats shall have a welded in overlay of high nickel content on all surfaces contacting the plug face. Valves shall have permanently lubricated, stainless steel bearings in the upper and lower plug stem journals. All valves shall be of the bolted bonnet design.
- B. Valves shall be designed so that they can be repacked without removing the bonnet from the valve and the packing shall be adjustable. All nuts, bolts, springs and washers shall be A-316 stainless steel.
- C. Valves shall be suitable for underground service and designed for working pressure of 150 P.S.I. The valve and actuator shall be capable of satisfactory operation in either direction of flow against pressure drops to and including 100 P.S.I.
- D. The exterior valve surfaces shall be shop painted with two coats of asphalt varnish conforming to Federal Specifications TT-V-51C.
- E. The valves shall be tested in accordance with ANSI/AWWA C504. The CONTRACTOR shall furnish certified copies of reports with every valve stating that the valve has met the requirements of the tests.
- F. Plug valves shall be Model 100 Series as manufactured by DeZurik or Clow Valve. No substitutions.

2.03 GATE VALVES LESS THAN THREE INCH (3") IPS, BRONZED:

- A. Gate valves for use with pipe less than three inches (3") in diameter shall be rated for two hundred (200) psi working pressure, non-shock, block pattern, screwed bonnet, non-rising stem, brass body, and solid wedge. They shall be standard threaded for PVC pipe and have a malleable iron handwheel. Gate valves less than three inches (3") in diameter shall be NIBCO T-113-LF with no substitutions allowed.

2.04 GATE VALVES THREE INCHES AND LARGER:

- A. The valves shall be resilient seated and shall conform in design, material, and workmanship to the standards of AWWA C509. Gate valves shall open counterclockwise and shall be of iron body, non-rising stem, and mechanical cut-in joint ends. All resilient seat valves must be bi-directional.
- B. Valves shall be coated with a two-part thermosetting epoxy coating on inside of valve and on valve disc. The coating shall conform to the requirements of AWWA C-550. After the factory test and inspection, all ferrous parts of the valves except finished or bearing surfaces shall be painted with two (2) coats of asphalt varnish, Federal Specification TT-V-51A or approved equal.
- C. Gate valves three inches and larger in diameter shall be American Flow Control Series 2500, or U.S. Pipe A-USP1 Resilient Wedge Gate Valves. No Substitutions.

2.05 BUTTERFLY VALVES **(Not Permitted without City Approval)**

- A. Valves shall conform to all requirements of AWWA C504 Standard Class 150B. Valves shall have mechanical - joint-type ends conforming to AWWA C111 and cast iron body conforming to ASTM A126 Class B standards.
- B. Valve bodies shall have two shaft bearing hubs cast integrally with the valve bodies. Valve bearings shall be sleeve type bearings with nylon bearings that are self-lubricating and do not have a harmful effect on water. Valve disc shall be cast iron conforming to ASTM A-126 Class B with 316 stainless steel disc edge.
- C. Valves shall be Mueller 3211-20, Clow F-5370, American Flow Control, or City of Hollywood approved equal.

2.06 TERMINAL BLOW-OFF VALVES:

- A. The terminal blow-off valve assemblies shall be installed in accordance with the details shown in the City of Hollywood Standard Details. The following products shall be used to construct the assemblies:
- B. Angle Valves (for terminal blow-off): 2-inch threaded valves with handwheel, bronze body and composition disc. 2-inch angle valves for terminal blow-off shall be NIBCO T311 or ITT Grinnell Fig. No. 3220
- C. After the tap has been made and the corporation stop has been installed on a pipe conveying potable water, the exposed exterior surfaces of the stop shall be heavily coated with Kop-Coat Super Hi-Gard 891 White 1898, or approved equal. Where taps are made in a pipe conveying sewerage, the Contractor shall heavily coat the inside of the pipe around the stop and the exposed exterior surfaces of the stop with Bitumastic 300M, by Kop-Coat Co., or Protector 401 for sewer applications.



- D. The installation of the terminal blow-off outlet shall include excavation; cutting, threading and installing PVC and galvanized pipe and fittings; tapping the ductile iron plug; concrete thrust block; furnishing and installing angle valve; cutting and placing cast iron riser pipe complete with valve boxes and cover, set in concrete; backfilling and compaction; and all other appurtenant items and work.

## 2.07 ECCENTRIC PLUG VALVES

- A. Equipment Requirements: Plug valves shall be on the non-lubricated, eccentric type with resilient faced plugs, port areas for valves 20 inches and smaller shall be at least 80% of full pipe area. Port area of valves 24 inches and larger shall be at least 70% of full pipe area. The body shall be of semi-steel (ASTM A-126 C1.B) and shall have bolted bonnet which gives access to the intervals of the valve. Seats shall be welded overlay of high nickel content or a stainless steel plate locked in the body cavity. If a plate is used, it shall be replaceable through the bonnet access. Bearings shall be permanently lubricated of stainless steel, bronze or teflon lined, fiber glass backed duralon. Bearing areas shall be isolated from the flow with grit seals. Valves shall have packing bonnets where the shaft protrudes from the grit seals. Valves shall have packing bonnets where the shaft protruded from the valve and the packing shall be self-adjusting chevron type which can be replaced without removing the bonnet. All nuts, bolts, springs and washers shall be A-316 stainless steel.
- B. Valves shall be designed for a working pressure of 150 PSI CWP. The valve and actuator shall be capable of satisfactory operation in either direction of flow against pressure drops up to and including 100 PSI (for plug valves over 12 inches in diameter). Valves shall be bubble tight in both directions at 100 psi differential.
- C. Plug valves over 12" in diameter shall have worm gear operators. The operating mechanism shall be for buried service with a 2 inch square operating nut.
- D. Plug valves are to be installed with the seat pointed towards the upstream flow, when specified.
- E. Manufacturers or Equal:
  - 1. Clow Valve Co.;
  - 2. DeZurik Corporation;

## 2.08 BALL VALVES (4-INCH AND SMALLER)

- A. General Requirements: Unless otherwise specified or shown, general purpose ball valves in size up to 4-inch shall have manual operators with lever or handwheel. Ferrous surface of 4-inch valves, which will be in contact with water shall be epoxy-coated. All ball valves shall be of best commercial quality, heavy duty construction.

- B. Body: All ball valves up to 1-1/2 inch (incl.) in size shall have bronze or forged brass 2 or 3 piece bodies with screwed ends for a pressure rating of not less than 300 psi WOG. Valves 2-inch to 4-inch in size shall have bronze forged brass or steel 2 or 3 piece bodies with flanged ends for a pressure rating of 150 psi.
- C. Balls: The balls shall be solid brass or chrome plated bronze, or stainless steel, with large or full openings.
- D. Stems: The valves seats shall be of Teflon or Buna N or equal, for bi-directional service and easy replacement.
- E. Ball Valve Manufacturers or Equal:
  - 1. Jamesbury Corporation;
  - 2. Jenkins Bros.;
  - 3. Lunkenheimer Flow Control;
  - 4. Wm. Powell Company;
  - 5. Worcester Controls;
  - 6. Valve Primer Corporation.

## 2.09 CHECK VALVES

- A. Refer to City standards, Section 15115 - Check Valves.

## 2.10 AIR-VACUUM AND AIR-RELEASE VALVES

- A. Air and Vacuum Valves: Air and vacuum valves shall be capable of venting large quantities of air while pipelines are being filled, and allowing air to re-enter while pipelines are being drained. They shall be of the size shown, with flanged or screwed ends to match piping. Bodies shall be of high-strength cast iron. The float, seat, and all moving parts shall be constructed of Type 316 stainless steel. Seat washers and gaskets shall be of a material insuring water tightness with a minimum of maintenance. Valves shall be designed for minimum 150 psi water-working pressure, unless otherwise shown.
- B. Air-Release Valves: Air-release valves shall vent accumulating air while system is in service and under pressure and be of the size shown and shall meet the same general requirements as specified for air and vacuum valves except that the vacuum feature will not be required. They shall be designed for a minimum water-working pressure of 150 psi, unless otherwise shown.
- C. Combination Air Valves: Combination air valves shall combine the characteristics of air and vacuum valves and air release valves by exhausting accumulated air in systems under

pressure and releasing or re-admitting large quantities of air while a system is being filled or drained, respectively. They shall have the same general requirements as specified for air and vacuum valves.

D. Air Vacuum and Release Manufacturers or Equal:

1. APCO (Valve and Primer Corporation);
2. Golden-Anderson Valve Division (GA Industries, Inc);
3. Val-Matic (Valve and Manufacturing Corporation).

2.11 BEARINGS:

A. Valve bearings shall be the sleeve type.

1. 100% nylon or Teflon for valves 20 inches and smaller.
2. Bearings shall be Teflon with fiberglass backing for valves 24 inches and larger.
3. Bearings shall be self-lubricating and bearing load shall not exceed 1/5 of the compressive strength of the bearing or shaft material.

B. Valve Discs:

1. Discs shall operate through a 90 degree angle from fully closed to fully open.
2. Valve discs shall be cast iron alloy ASTM A436 Type 1, ASTM A48 or ASTM A126 for valves 20 inches and smaller and ASTM A48 cast iron or ASTM A536 ductile iron for valves 24 inches and larger.
3. Valve discs shall have a Type 316 stainless steel seating edge and shall not have any hollow chambers.

C. Shafts and Seals

1. Valve shafts shall be Type 316 stainless steel meeting the minimum requirements of AWWA C504.
2. Valve shafts shall be one piece for valves 20 inches and smaller and two piece for valves 24 inches and larger.
3. Shaft seals shall be self-compensating, split V type and shall be adjustable and replaceable without removing the operator and/or the shaft, except for buried applications.
4. Shaft seals shall be Buna-N unless otherwise specified.

- D. Valves for buried service shall be totally enclosed, fully gasketed, grease packed and designed to operate indefinitely when submerged under a minimum 20 feet of water.
- E. Manufacturers: Valmatic – American BFV, Pratt – Groundhog, or Dezurik – BAW.

#### 2.12 CORPORATION STOPS (Ball Valve Type)

- A. Unless otherwise shown, corporation stops shall be made of brass alloy for key operation, with screwed ends with corporation thread or iron pipe thread, as required. AWWA taper thread for inlet thread and compression type fittings for outlet.
- B. Corporation Stops shall be as manufactured by or the Ford Meter Box Company or approved equal.

#### 2.13 TAPPING VALVES AND TAPPING SLEEVES: NOT USED

#### 2.14 VALVE BOXES AND COVERS

- A. Valve boxes and covers for all size valves shall be of cast iron construction and adjustable screw-on type. The lid shall have cast in the metal the word "WATER" for the water lines, or "SEWER" for sewage force mains. All valve boxes shall be six-inch (6") nominal diameter and shall be suitable for depths of the particular valve. The stem of the buried valve shall be within twenty-four inches (24") of the finished grade unless otherwise approved by the ENGINEER. Valve boxes for 3" through 20" valves shall be Tyler Union model 6860 Cast Iron screw-type valve box with 5- $\frac{1}{4}$ " locking lid, or approved equal.
- B. Cast iron valve box shall not rest directly upon the body of the valve or upon the pipe. The box shall be placed in proper alignment and to such an elevation that its top will be at the final grade. Backfilling around both units shall be placed and compacted to the satisfaction of the ENGINEER.

### PART 3 - EXECUTION

#### 3.01 VALVE INSTALLATION

- A. General: All work shall be performed by skilled workmen experienced in similar installations. All valves shall be adequately supported by clamps, brackets, straps, concrete supports or other devices as shown or specified. All supports shall be secured to structures by approved inserts or expansion shields and bolts.
- B. All valves shall be thoroughly cleaned internally before being installed. Installation of valves shall be done in accordance with this section.
- C. All valves, gates, operating units, stem extensions, valve boxes, and accessories shall be installed in accordance with the manufacturer's written instructions and as shown and specified. All gates shall be adequately braced to prevent warp and bending under

the intended use. Valves shall be firmly supported to avoid undue stresses on the pipe. Install valves so that they are easily accessible for operation, visual inspection and preventive maintenance.

- D. Location of valves and chain operators: Install valves so as to be accessible for operation and free from interferences when operated. Position so that leakage will not contact any electrical equipment that may be located below.
- E. The installation of all underground valves shall include a valve box and riser in accordance with the Details shown on the Plans or in the Standard Details for the various sizes and types of valves to be installed. Riser pipes and valve boxes shall be carefully centered and set flush with the finished grade if in paving, or with the top of the ground if out of paved areas. All valve boxes shall be held in position with concrete as shown on the Plans or in the Standard Details.
- F. Upon completion of the Project, but prior to final acceptance, the Contractor in the presence of the Engineer, shall fully open each valve installed by him, except at connections to existing City mains. For valves 16-inch and larger, the Contractor, shall count the number of turns required to operate each valve from a completely closed to a fully opened position, and shall paint the number on the bottom of the valve box lid or manhole cover. Valves at connections to existing City mains shall only be operated by City forces.
- G. Valve Accessories: Where combinations of valves, sensors, switches, and controls are specified, it shall be the responsibility of the Contractor to properly assemble and install these various items so that all systems are compatible and operating properly. The relationship between interrelated items shall be clearly noted on shop drawing submittals.
- H. Flange Ends:
  - 1. Flanged valve boltholes shall straddle vertical centerline of pipe.
  - 2. Clean flanged faces insert gasket and bolts and tighten nuts progressively and uniformly.
- I. Screwed Ends:
  - 1. Clean threads by wire brushing or swabbing.
  - 2. Apply joint compound.

J. Valve Orientation:

1. Install operating stem vertical when valve is installed in horizontal runs of pipe having centerline elevations 4 feet 6 inches or less above finished floor, unless otherwise shown.
2. Install operating stem horizontal in horizontal runs of pipe having centerline elevations between 4 feet 6 inches and 6 feet 9 inches above finish floor, unless otherwise shown.
3. Orient butterfly valve shaft so that unbalanced flows or eddies are equally divided to each half of the disc, i.e., shaft is in the plane of rotation of the eddy.
4. If no plug valve seat position is shown, locate as follows:
  - (a) Horizontal Flow: The flow shall produce an “unseating” pressure, and the plug shall open into the top half of valve.
  - (b) Vertical Flow: Install seat in the highest portion of the valve.

K. Install a line size ball valve and union upstream of each solenoid valve, in line flow switch, or other in line electrical device, excluding magnetic flowmeters, for isolation during maintenance.

L. Locate valve to provide accessibility for control and maintenance. Install access doors in finished walls and plaster ceilings for valve access.

M. Extension Stem for Operator: Where the depth of the valve is such that its centerline is more than 3 feet below grade, furnish an operating extension stem with 2 inch operating nut to bring the operating nut to a point 6 inches below the surface of the ground and/or box cover.

N. Torque Tube: Where operator for quarter-turn valve is located on floor stand, furnish extension stem torque tube of a type properly sized for maximum torque capacity of the valve.

3.02 VALVE CUT-INS ON WATER MAINS

A. Water system shall be maintained under pressure during entire construction. All valve additions shall be performed while the system is in service. No line shall be shut down during construction by Contractor or others unless approved by the OWNER.

B. Valve Accessories: Where combinations of valves, sensors, switches, and controls are specified, it shall be the responsibility of the Contractor to properly assemble and install these various items so that all systems are compatible and operating properly. The relationship between interrelated items shall be clearly noted on shop drawing submittals.

### 3.03 TESTS AND INSPECTION

- A. Valve may be either tested while testing pipelines, or as a separate step.
- B. Test that valves open and close smoothly with operating pressure on one side and atmospheric pressure on the other, in both directions for two-way valve and applications.
- C. Inspect air and vacuum valves as pipe is being filled to verify venting and seating is fully functional.
- D. Count and record number of turns to open and close valve; account for any discrepancies with manufacturer's data.
- E. Set, verify, and record set pressures for all relief and regulating valves.
- F. Test hydrostatic relief valve seating; record leakage. Adjust and retest to maximum leakage of 0.1 gpm per foot of seat periphery.

END OF SECTION

## SECTION 15115

### CHECK VALVES

#### PART 1- GENERAL

##### 1.01 SCOPE

- A. The Contractor shall furnish and install check valves complete and operable, including all appurtenances and accessories

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 15060 - Piping and Fittings
- B. Section 15001 - Water Services and Miscellaneous Fittings

##### 1.03 SUBMITTALS

- A. Section 01300 - Submittals: Requirements for submittals.
- B. Product Data: Submit data indicating material used for check valves.
- C. Shop Drawings: Submit shop drawings for check valves.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- E. Manufacturers: Golden Anderson and Clow Valve Co., no substitutions.

#### PART 2 - PRODUCTS

##### 2.01 CHECK VALVE

- A. Check Valves (2-inch through 24-inch diameter):
  - 1. The swing-check valves for water, sewage, sludge, and general service shall be standard (plain), outside lever-and-weight or outside lever-and-spring types, for normal horizontal installations, conforming to all of the applicable requirements of the most current ANSI/AWWA Standard C508, "Swing- Check Valves for Waterworks Service, 2-in. through 24-in. NPS", except as otherwise specified herein.
  - 2. The valve body and cover shall be of cast iron conforming to ASTM A 126, with flanged ends conforming to ANSI B 16.1, or mechanical joint ends, as shown.
  - 3. Valves shall have full-opening passages and suitable for buried service.



4. Valve bonnet opening shall have a flanged cover piece large enough to allow ample clearance for direct removal of disc by hand.
5. The valve disc shall be of cast iron, ductile iron, or bronze conforming to ASTM B 62.
6. The valve seat and rings shall be of bronze conforming to ASTM B 62 or B 148, or of Buna-N or equal.
7. The hinge pin shall be of bronze or stainless steel.
8. Check valves 2" – 12" shall have a minimum working pressure of 175 psi.

B. Check Valves (1-inch and smaller)

1. Check valves 1-inch and smaller in diameter for water services shall be lead free Dual Check Valves meeting the domestic requirements of ANSI/ASSE Standard 1024 and bearing the seal of approval. They shall have a cast body identifying the direction of flow, with meter swivel nut inlet by iron pipe thread outlet. The operating temperature range shall be between 33° and 180°F, and continuous maximum working pressure of 150psi.
2. Check valves 1-inch and smaller in diameter shall be WATTS Series LF7 10-U2, or Ford Meter Box Company, Inc. Straight Cartridge Dual Check Valve, or City approved equal.

C. External Ferrous Items

1. All external ferrous items, except cast iron, shall be hot-dipped galvanized in accordance with the most current ANSI/ASTM Standard A123, "Zinc (Hot-Galvanized) Coatings on Iron and Steel Products", or ANSI/ASTM Standard A153, "Zinc Coating (Hot-Dip) on Iron and Steel Hardware", or stainless steel.

D. Flanged Valves

1. Flanged valves shall have ends plain-faced and drilled conforming to ANSI Standard B16.1, "Cast Iron Pipe Flanges and Flanged Fittings", Class 125. Bolt holes in the flanges shall be equally spaced and shall straddle the vertical and horizontal centerline. All joint materials for flanged valves will be furnished with the valves; neoprene for sewer and SBR for water applications.

E. Clapper

1. The clapper shall swing clear of the waterway when the valve opens, permitting a full flow through the valve equal to the nominal diameter of the pipe.
2. The body and clapper seating surface shall be metal to metal, and shall be bronze.

3. The clapper disc and the clapper hinge arm, including the clapper disc cap screw, shall be bronze or cast iron. Clapper to hinge arm connection shall be such that the unit cannot be unscrewed by fluid flow.

F. Clapper Hinge Pin

1. The clapper hinge pin shall be stainless steel conforming to AISI Type 316. For check valves with outside levers, the clapper hinge pin shall rest in bronze bushings and shall extend through the casing on the right-hand side when facing the valve inlet.
2. The clapper hinge pins shall rest in bronze bushings provided with a packing type seal ("O"-rings are not acceptable) and shall extend through the casing on the right-hand side when facing the valve inlet. An opening shall be provided in each of two bosses on the body for easy access to either end of the hinge pin. The openings shall be tapped and provided with plugs.

- G. Valves shall be lined with a two-part epoxy in accordance with AWWA C-550.

2.02 TESTING

- A. All check valves shall be tested at the factory in accordance with Section 5.2 of the most current
- B. ANSI/AWWA Standard C508 and a Certified Test Report shall be furnished with each valve.

PART 3 - EXECUTION

3.01 GENERAL

- A. All valves shall be installed in accordance with provisions of 15100 - Valves, General. Care shall be taken that all valves are well supported.

END OF SECTION

## SECTION 15995

### PIPELINE TESTING AND DISINFECTION

#### PART 1 - GENERAL

##### 1.01 THE REQUIREMENT

- A. The Contractor shall perform flushing and testing of all pipelines and appurtenant piping, complete, including conveyance of test water from City-designated source to point of use and all disposal thereof, all in accordance with the requirements of the Contract Documents.

##### 1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Commercial Standards

ANSI / AWWA B300	Hypochlorites
ANSI / AWWA B301	Liquid Chlorine
ANSI / AWWA C651	Disinfecting Water Mains

##### 1.03 SUBMITTALS

- A. A testing schedule, including proposed plans for water conveyance, control, and disposal shall be submitted in writing for approval a minimum of seven (7) days before testing is to start.
- B. The Contractor shall submit disinfection test reports and hydrostatic test reports in accordance with Sections 01300 Submittals and Section 01700 Project Closeout.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS REQUIREMENTS

- A. All equipment, temporary valves or bulkheads, temporary vents or drains, pumps, piping, gauges or other water control equipment and materials required for testing of mains shall be furnished, installed and operated by the Contractor subject to the City's review. No materials shall be used which would be injurious to the construction or its future function.
- B. Pumps shall be of a non-pulsating type suitable for this application and gauge accuracy certification may be required at the Engineer of Record's discretion.
- C. All pressure and leakage testing shall be done in the presence of a representative of the City as a condition precedent to the approval and acceptance of the system.

- D. All water mains shall be flushed to remove all sand, debris, rock and other foreign matter. Dispose of the flushing water without causing a nuisance or property damage.

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. Notify the Engineer and City 48 hours in advance to obtain City's approval to commence testing and/or disinfection of any particular structure and/or pipeline. System isolation shall not be performed by the Contractor unless notification and approval has been obtained from the City.
- B. Unless otherwise provided herein, water for flushing and testing pipelines will be furnished by the City; however, the Contractor shall make all necessary provisions for conveying the water from the City-designated source to the points of use.
- C. All pressure and gravity pipelines shall be tested. All testing operations shall be performed in the presence of the City.

### 3.02 FLUSHING AND CLEANING

- A. At the conclusion of the installation work, the Contractor shall thoroughly clean all new liquid conveying pipe by flushing with water or other means to remove all dirt, stones, pieces of wood, etc., which may have entered the pipe during the construction period. If after this cleaning any obstructions remain, they shall be corrected by the Contractor, at his own expense, to the satisfaction of the City. Liquid conveying pipelines shall be flushed at the rate of at least 2.5 feet per second for a duration suitable to the City or shall be flushed by other methods approved by the City.
- B. After the pipelines are cleaned and if the groundwater level is above the pipe, or following a heavy rain, the Engineer will examine the pipe for leaks. If defective pipes or joints are discovered at this time, they shall be repaired or replaced by the Contractor.

### 3.03 HYDROSTATIC TESTING OF PIPING (WATER AND FORCE MAINS)

- A. Following pipeline flushing, the Contractor shall hydrostatically test all pipelines either in sections or as a unit. The section of main being tested shall be limited to a maximum length of 2000 feet. No section of the pipeline shall be tested until all field-placed concrete or mortar has attained an age of 14 days. The test shall be made by closing valves when available, or by placing temporary bulkheads in the pipe and filling the line slowly with water.
- B. The Contractor shall provide all reaction blocking and necessary plugs and caps required to test all piping installed as part of this Contract. The Contractor shall supply and install temporary air release valves for purposes of facilitating proper hydrostatic testing conditions. Location of the ARV's shall be as per the instructions given by the Engineer. The Contractor shall be responsible for ascertaining that all test bulkheads are suitably restrained to resist the thrust of the test pressure without damage to, or movement of,

the adjacent pipe. Care shall be taken to see that all air vents are open during filling. The Contractor shall be responsible for removing temporary ARV's, reaction blocking and temporary plugs and caps upon the successful completion of the testing and shall be responsible for all associated site restorations resulting from his/her work.

- C. The pipeline shall be filled at a rate which will not cause any surges or exceed the rate at which the air can be released through the air valves at a reasonable velocity and all the air within the pipeline shall be properly purged. After the pipeline or section thereof has been filled, it shall be allowed to stand under a slight pressure for at least 24 hours to allow the concrete or mortar lining, as applicable, to absorb what water it will and to allow the escape of air from any air pockets. During this period, bulkheads, valves, and connections shall be examined for leaks. If leaks are found, corrective measures satisfactory to the City shall be taken.
- D. The hydrostatic test shall consist of holding a test pressure of 150 psi on the pipeline for a period of 2 hours and in accordance with ANSI/AWWA Standard C605-05. All visible leaks shall be repaired in a manner acceptable to the City.
- E. The maximum allowable leakage shall be determined by the following formula:

$$L = \frac{S \bullet D \bullet \sqrt{P}}{148,000}$$

Where:

L = Allowable leakage for system in gallons per hour

D = Pipe diameter in inches

S = Length of lines in lineal feet

P = Average test pressure in psi

- F. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gallon / hour / inch of nominal valve size shall be allowed. Any questions pertaining to procedures used during the test shall be decided by the Engineer.
- G. The test is usually maintained for two hours, but it may be continued for one additional hour if it becomes apparent that the leakage is equal to or greater than the amount allowable. Water supplied to the main during the test to maintain the required pressure shall be measured by a 5/8-inch meter installed on the discharge side of the test pump, or by pumping from a calibrated container. A hose bib connection will be provided by the Contractor to accept the test gauge supplied by the Owner.
- H. In the case of pipelines that fail to pass the prescribed leakage test, the Contractor shall determine the cause of the leakage, shall take corrective measures necessary to repair the leaks, and shall again test the pipelines. No installation will be acceptable by the Owner until the leakage is less than the allowable for the system.
- I. The Contractor shall submit to the City a detailed description of the testing procedures to be utilized.

### 3.04 DISINFECTION (POTABLE WATER LINES ONLY)

- A. After the water mains have satisfied the leakage requirements, they shall be flushed through openings of the required size as detailed in ANSI/AWWA Standard C601 latest revision. The main shall then be disinfected in accordance with the provisions of the applicable sections of the above-named specifications. On main breaks, cut ins, etc., a liberal application of calcium hypochlorite shall be made.
- B. Mains shall not be put into domestic service until the necessary bacteriological samples have been approved by the applicable regulatory agencies.
- C. Provide list of equipment required and a disinfection plan to execute the work of this Section.
- D. Inject the required amount of disinfectant to yield a minimum chlorine content of 50 ppm into piping system.
- E. Allow solution to remain in the pipes for twenty-four hours or longer, if required, to destroy all harmful bacteria.
- F. Operate all valves and other appurtenances during disinfection to assure the sterilizing mixture is dispersed into all parts of the system.
- G. After the solution has been retained for the required time, pipes shall be flushed and filled with municipal domestic water. Sterilizing water shall be disposed of in an approved manner. Sterilizing water shall not be allowed to flow into a waterway without reducing chlorine concentrations to a safe level. The Contractor shall be responsible for meeting all applicable requirements and acquiring all necessary permits for this work.

### 3.05 BACTERIOLOGICAL ANALYSES

- A. Sample points for the purpose of collecting water samples for bacteriological analysis shall be provided by the contractor as indicated on the plans and as directed by the Florida Department of Environmental Protection (FDEP) at no additional cost to the Contract. Sampling points may be temporary and consist of a corporation tap, 1-inch copper tubing and 1-inch gate valve specifically provided for sample collection. Temporary sampling points may not be removed until the sample results are approved by FDEP. Sampling points may be permanent, such as a terminal blow-off, fire hydrant, etc.
- B. The Contractor shall be responsible for retaining the services of a testing laboratory certified by State of Florida, and approved by FDEP in the collection, storage and analysis of water samples from public water systems in accordance with Chapter 62-550.550 (FAC), "Certified Laboratories and Analytical Methods for Public Water Systems".
- C. Take one bacteriological sample and test from every segment of pipeline tested. Contractor shall submit sample to a laboratory, approved by Engineer, for testing. The

disinfection process shall be repeated if laboratory test results reflect presence of harmful bacteria in the water.

- D. The Contractor shall be responsible for any rechlorination and retesting that may be required until the Florida Department of Environmental Protection's approval is obtained. The Contractor shall be responsible for the disposal of all water flushed from the system and shall safeguard all adjoining properties from damage from flooding. The Contractor shall exercise due care in the protection of private property from water damage due to his operations. In addition, the Contractor shall assume complete liability for any damage which was directly or in-directly caused by his operations.
- E. Provide analysis of treated water to meet standards and received acceptance from the Florida Department of Environmental Protection.
- F. Provide satisfactory bacteriological analysis (a.k.a Main Clearance), taken within sixty (60) days of completion of construction, from locations within the distribution system or water main extension to be cleared, in accordance with Rules 62-555.315(6), 62-555.340, and 62-555.330, F.A.C. and American Water Works Association (AWWA) C651-92, "Standard for Disinfecting Water Mains", as follows:
  - 1. Connection to an existing system
  - 2. The end point of the proposed addition
  - 3. Any water lines branching off a main extension
  - 4. Every 1,200 feet on straight runs of pipe
- G. Each location shall be sampled on two consecutive days, with sample points and chloride residuals readings clearly indicated on the report. A sketch or description of all bacteriological sampling locations must also be provided.
- H. Quality Assurance: Testing Laboratory: Certified for examination of drinking water in compliance with applicable legislation of the State of Florida.
- I. Regulatory Requirements: Conform to Chapter 17-22 of the Florida Administrative Code.
- J. Submittals
  - 1. Submit name of testing laboratory and evidence of qualification.
  - 2. Submit three copies of reports.
- K. Project Record Documents
  - 1. Submit reports under provisions of Sections entitled "Submittals", "Project Closeout", and "Project Record Documents and Survey".
  - 2. Bacteriological report; accurately record:

- (a) Date issued, project name, and testing laboratory name, address, and telephone number.
- (b) Time and date of water sample collection.
- (c) Name of person collecting sample.
- (d) Test locations.
- (e) Initial and twenty-four- hour disinfectant residuals in ppm for each outlet tested.
- (f) Coliform bacteria test results for each outlet tested.
- (g) Certification that water conforms or fails to conform to bacterial standards of State of Florida.
- (h) Bacteriologist's signature.

### 3.06 TESTS FOR DRAIN AND GRAVITY SEWER LINES:

- A. Drain and gravity sewer lines shall be tested for infiltration and exfiltration.
- B. The allowable limits of infiltration or exfiltration (leakage) for the drain or sewer lines, or any portion thereof, shall not exceed the greater of the following:
  - 1. 100 gallons per inch of internal pipe diameter per mile of pipe per 24 hours with no allowance for laterals or manholes.
  - 2. As required by the Broward County/FDEP permit.
  - 3. As per Chapter 33.94 of Recommended Standards for Wastewater Facilities (2004 Edition). Duration of test shall be a minimum of two hours.
- C. The system may be tested for infiltration or exfiltration in whole or in parts, as directed by the Engineer. Prior to testing for infiltration, the system shall be pumped out so that normal infiltration conditions exist at the time of testing. The amounts of infiltration or exfiltration shall be determined by pumping into or out of calibrated drums, or by other approved methods.
- D. The exfiltration test will be conducted by filling the portion of the system being tested with water to a level which will provide a minimum head of 2-feet in a lateral connected to the test portion, or in the event there are no laterals in the test portion, a minimum difference in elevation of 5-feet between the crown of the highest portion of the drain or sewer and the test level.

END OF SECTION



## SECTION 15997

### POLYETHYLENE ENCASEMENT

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. All cast/ductile iron pipe, fittings, valves and risers shall be encased with polyethylene film in order to prevent contact between the pipe and the surrounding soil for the purpose of corrosion protection, following all requirements of this section. Cost for all PE encasement shall be included in the linear footage piping cost.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 01300 - Submittals
- B. Section 15060 – Piping and Fittings

##### 1.03 REFERENCED SPECIFICATIONS, CODES AND STANDARDS

- A. AWWA C105-10
- B. ANSI A21.5
- C. ASTM D149
- D. ASTM D882
- E. ASTM D1248
- F. ASTM D1709-B
- G. ASTM D1922
- H. ASTM D4976
- I. NT4112-05

##### 1.04 SUBMITALLS – Per Section 01300

- 1. Manufacturer's product data for polyethylene tubing
- 2. Manufacturer's product data for polyvinyl tape

## PART 2 - PRODUCTS

### 2.01 MATERIALS

#### A. Polyethylene Tube:

1. Only virgin polyethylene material shall be approved. The material shall be 8 mil minimum, Group 2, Linear Low Density, flat tube polyethylene film meeting or exceeding the requirements of AWWA C105-10, ANSI A21.5-88, ASTM D4976 and NT4112-05, and having the following properties:

Color	Blue for water piping , Green for wastewater piping
Tensile Strength	3600 psi, minimum - ASTM D882
Elongation	800%, minimum - ASTM D882
Dielectric Strength	800 V/mil, minimum - ASTM D149
Impact Resistance	600 g, minimum - ASTM D1709-B
Propagation Tear Resistance	2550 gf, minimum - ASTM D1922

2. The film shall be marked showing trademark, year of manufacture, type of resin, specification conformance, applicable pipe sizes and the words "warning: corrosion protection-repair any damage."
3. Tube size will be as listed below or as otherwise approved:

Nominal pipe diameter (in.)	Polyethylene flat tube width (in.)
4	16
5	20
8	24
12	30
16	37
20	45
24	54
30	67
36	81
42	95
48	108
54	121

#### B. Polyvinyl Tape:

1. The polyethylene encasement shall be secured to the cast/ductile iron using 6-inch, 10-mil "all weather" tape with polyvinyl film backing. On the tape shall be marked the UPC code and mil thickness designation. Pipe-wrap tape shall be moisture resistant, anti-corrosive, conform and adhere to both metal and plastic.

## PART 3 - EXECUTION

### 3.01 POLYETHYLENE ENCASEMENT

- A. The polyethylene sleeve (polywrap) shall be installed in accordance with ANSI/AWWA C105/A21.5, "Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids". The polywrap shall be placed on the cast/ductile iron pipe so that no dirt or bedding material comes in contact with the pipe. All lumps of clay, mud, cinders, etc., on the pipe surface should be removed before the pipe is covered with polyethylene. If the polyethylene is damaged, it must be repaired before the trench is backfilled.
  - 1. Small holes or tears can be repaired with a piece of tape placed over the hole. Large holes or tears should be repaired by taping another piece of polyethylene over the hole.
  - 2. Overlaps, ends, and repairs can be held in place with tape or plastic tie straps until the trench is backfilled.
- B. General installation recommendations:
  - 1. When lifting polywrapped pipe with a backhoe, use a fabric-type "sling" or padded cable to protect the polyethylene.
  - 2. When installing polywrap below the water table or in areas subject to tidal action, seal as thoroughly as possible both ends of each polyethylene tube with adhesive tape or plastic tie straps at the joint overlap. Also, place tape or plastic tie straps around the pipe at two (2) foot intervals.
  - 3. Special care shall be taken to prevent damage to wrapping when placing backfill.
  - 4. Quality of installation is more important than the actual sequence followed.
- C. Per AWWA C105-05, there are 3 installation methods:
  - 1. Method "A" - The polyethylene tube should be cut to lengths that provide a one foot overlap beyond each end of a pipe section. Slip the tubing over the pipe with the printed side up, and bunch it back to clear both ends. A shallow bell hole should be made to facilitate installation of the polyethylene. Lower pipe into position and make up the joint. Pull tubing over the joint from the preceding pipe length and tape it securely to the new pipe length. Overlap the polyethylene from the new pipe length back over the same joint and tape in place on the preceding pipe barrel. Pull the polyethylene along the length of the new pipe, folding excess tubing over the top of the pipe barrel and securing it every 3 to 4 feet.

Keep the excess polyethylene for the overlap of the next joint bunched back from the joint in preparation for making the next joint. Repeat this process for each polyethylene taped into place.

2. Method "B" - Cut the polyethylene tube 1 ft. shorter than the length of pipe sections. Slip the tube around the pipe so as to allow 6 in. of bare pipe at each end. Before making a joint, slip a 3 ft. Length of polyethylene tube over the preceding pipe section. Overlap by at least 1 ft. and secure, after joint is made.
3. Method "C" - Wrap odd shaped fitting with sheet or split length of polyethylene tube by passing the sheet under the fitting and bringing it up around the body. Make seams by bringing it folding over twice, and tapping down. Tape the sheet securely in place at valve stems and other penetrations.
4. Pipe-shape fittings (bends, reducers, etc.) shall be treated according to Methods "A" and "B". Odd shaped fittings (valves, tees, etc.) shall be treated according to Method "C".

END OF SECTION



# **DIVISION 16**

**NOT USED**